6.1 6.L.18.

Hugh Cecil Earl of Lonsdale.

1793.

108 Lectures on the Elements of Farriery; or, the Art of Horse-shoeing, and on the Diseases of the Foot. Designed chiefly for the use of the pupils of the Veterinary College, London. By **Charles Vial de Sainbel,** Professor of Veterinary Medicine in the College. London. 1793.

4to. The Advertisement, Preliminary Discourse, and Six Lectures contain 202 pp. Frontispiece designed by Richard Lawrence, and engraved by Matthew Haughton; 2 single-page plates and 1 folding ditto. M., 10½ in. by 8½ in.

Dedicated to the President, Vice-Presidents, Directors, and the other members of the Veterinary College London.

a L'aſpect de La Verité
La Routine S'etonne, L'ignorance S'enfuit.

108

LECTURES

ON

THE ELEMENTS OF FARRIERY;

OR, THE

ART OF HORSE-SHOEING,

AND

ON THE DISEASES OF THE FOOT.

DESIGNED CHIEFLY

FOR THE USE OF THE PUPILS

OF THE

VETERINARY COLLEGE, LONDON.

BY

CHARLES VIAL DE SAINBEL,

PROFESSOR OF VETERINARY MEDICINE IN THE COLLEGE.

LONDON:

PRINTED FOR THE AUTHOR,

MDCCXCIII.

TO THE

PRESIDENT,

VICE-PRESIDENTS, DIRECTORS,

AND

THE OTHER MEMBERS,

OF

THE VETERINARY COLLEGE, LONDON;

BY WHOSE DISCERNMENT, SPIRIT, AND MUNIFICENCE,

THE PROVINCE OF VETERINARY MEDICINE

IS AT LENGTH

RESCUED FROM PREJUDICE AND IGNORANCE,

AND RESTORED TO SCIENCE;

THESE

ELEMENTARY LECTURES ON FARRIERY

ARE,

WITH THE SINCEREST GRATITUDE AND RESPECT,

INSCRIBED BY

THE AUTHOR

EXPLANATION OF THE PLATES.

No. I.

THE frontispiece, representing a groom holding a horse's foot.

No. II.

The Veterinarian, explaining to the Farrier the natural shape of the foot, and the form of a shoe proper for it.

No. III.

Ignorance running away, with a mask in her hand.

PLATE I.

Fig. A. *Represents a leg well jointed.*

Fig. B. ——— *a leg too long jointed.*

Fig. C. ——— *a leg too short jointed.*

Fig. D. D. ——— *feet turning outwardly, called in French,* panard.

Fig. EE. ——— *feet turned inwardly, called in French,* cagneux.

Fig. F. G. ——— *a leg describing a circle of 25 degrees, and the foot supposed to be shod with the new concave shoe.*

Fig. H. I. ——— *a leg, the foot supposed to be shod with a flat shoe.*

Fig.

Fig. K. L. ——— *a leg, the foot supposed to be shod with a convex shoe.*
Fig. No. 7. ——— *a patten or scate shoe.*
Fig. No. 8. ——— *another sort of patten shoe.*

PLATE II.

Fig. M. *Represents the inferior surface of a good foot, having never received any damage from the Farrier.*
Fig. N. ——— *the inferior surface of the foot, whose natural shape has been destroyed by bad shoeing.*
Fig. No. 9. *Represents the hinge or joint shoe, for all feet, with a flat rivet nail joining them together in the toe, so that it may be made both wider and narrower to serve any foot; and with a double range of holes.*
Fig. 10. ——— *the mules shoe for the fore feet, called in French,* planche.
Fig. 11. ——— *the mules shoe for the hind feet, called in French,* florentine.
Fig. 12. ——— *the shoe for an ox.*

An Explanation of the Six Hoofs moulded in Plaister.

No. 1. *Represents a good hoof.*
No. 2. ——— *a hoof bound.*
No. 3. ——— *a flat foot.*
No. 4. ——— *a pommet, or convex foot.*
No. 5. ——— *a crooked foot.*
No. 6. ——— *a foot destroyed by the buttress.*

An

An Explanation of the Six Brass Shoes.

No. 1. *Represents a concave shoe for a good foot.*
No. 2. ——— *a shoe for a good hind foot.*
No. 3. ——— *a shoe for a flat foot.*
No. 4. ——— *a shoe for a convex foot.*
No. 5. ——— *a French shoe.*
No. 6. ——— *a half moon shoe.*

CONTENTS.

CONTENTS.

Page.

THE Advertisement — 1

The Preliminary Discourse — 5

LECTURE I.

Containing the external and internal description of the foot 49

Of the fibres which compose the hoof — 50

——— *different degrees of density of the hoof* — 52

——— *reproduction of the hoof* — 53

——— *shape of the hoof* — 54

——— *proportion of the foot, with the other parts of the leg* *ib.*

Of too large an hoof — *ibid*

——— *small a foot* — 55

——— *low heels* — 56

——— *short a foot, and too high heels* — *ibid*

——— *short a pastern* — 57

Of the constituent parts of the foot — *ibid*

——— *direction of the surface of the hoof* — *ibid*

——— *thickness of the hoof* — 58

——— *equality of the quarters* — *ibid*

——— *situation of the heels, and of their proportion* *ibid*

——— *frog* — 60

——— *sole* — 61

——— *binders* — 62

——— *internal parts of the foot* — *ibid*

——— *bone of the foot* — 63

Of

Of the cartilages of the foot — — 65
—— *foliated substance* — — *ibid*
—— *fleshy sole* — — — 65
—— *fleshy frog* — — — 66
—— *blood, nervous and lymphatic vessels, and of the glands* — — *ibid* and 67
—— *use of the parts which compose the foot* — 67

LECTURE II.

Of the position of the foot on the ground, of the concave form of the inferior surface of the foot with respect to shoeing 73
—— *shape of the shoe with respect to the natural form of the foot* — — — 79
—— *utility of the concave form of the sole* — 82
A description of the action of the leg in motion — 83
An arbitrary calculation of the extent of action of a leg, when the foot is shod with a concave or convex shoe 87
The concave shoe cannot be employed in all cases — 89
Of the proportions of the concave shoe — 90
—— *number of stamp-holes* — — 91
—— *weight of shoes* — — 92
—— *for mules* — — 94
—— *for asses* — — 95
—— *for oxen* — — — *ibid*

LECTURE III.

On the manner of paring the foot, of the accidents which result from this operation ill performed, and of shoeing a good foot, a flat foot, and of a foot whose sole is higher than the hoof 97

Of

Of the shoeing of a foot turned outwardly — 102
—— *shoeing of a foot turned inwardly* — *ibid*
—— *shoeing of a narrow heeled foot, called,* hoof bound 114
—— *slipper shoe* — — 115
Of the shoeing of a horse liable to cut — 116
—— *causes which occasion a horse to over-reach, and of the manner of shoeing him* — — 118
A comparison of the high heels to women's shoes 122
Reflections on a method recommended by M. Bourgelat 123
Advice to Farriers — — 126

LECTURE IV.

On the natural and accidental diseases of the foot 129
—— bleime, *or corns* — — *ibid*
—— seime, *or sand cracks* — — 136
—— fic, *or* crapeau, *or canker* — — 159

LECTURE V.

On Foundering

LECTURE VI.

Containing a description of the case commonly known under the denomination of a strain in the back sinews and tendons not susceptible to be strained — 178
Anatomical experiments upon the tendons and the ligaments 180
Causes of the swelling of the leg in the case of a strain 182

Proofs

Proofs of what has been advanced — — 184
Causes which produce the strain — 185
Symptoms of the strain — — 186
Bad effects of astringents employed too late — 187
Proper treatment of the strain — — 188
Rupture of the tendon — — 190
Symptoms of that accident — — 191
Fracture of the bone of the foot — 193
Fracture of the bone of the coronet, and of the navicular 195
Pricking of the foot — — 196
Utility of the scate shoe. — — 199

☞ AS, in the course of the following Work, but little has been said concerning the Running Thrush, the Reader is desired to observe, that that disease being of the same nature as the Grease, the Author proposes to treat of it fully, in a Work which will speedily be offered to the Public.

THE AUTHOR of the following sheets is obliged to have recourse again to the candour and indulgence he has so often experienced, on account of the inaccuracies in the printing; but he trusts, that the Reader's justice will make him sensible of the great difficulty attending the printing a work in translation, in a language with which the Author is not yet critically acquainted; especially during the exercise of a very active office; and of the still greater difficulty of finding a person sufficiently interested in the success of a work, to correct the impression with the exactness required. The Reader is earnestly requested to correct the text by the following *errata*, as some of the errors materially affect the sense.

ERRATA.

Page	Line	
9	15	*for* fate *read* fall.
10	4	— Gasper *read* Gesner.
12	13	— Ben Calann *read* Ben Calaun.
ib.	17	— al sanatrin *read* al sanatein.
14	11	— excited *read* exerted.
19	11	— selected of *read* selected out of.
22	14	— the castle *read* the castle of Alfort.
29	7	— 40 livres *read* 40 louis.
34	20	— vice-procident *read* vice-president.
39	15	— two parts *read* two ducts.
41	18	— 1765 *read* 1665.
49		— ferrare (note) *read* ferrure.
54	18	— and *read* or.
59	1	— heals *read* heels.
62	14	*for* within, outwardly *read* within outwardly,
65	6	— tie *read* lie.
67	14	— for *read* on.
74	(note)	— dele the less.
86	24	— five points *read* four points.
100	13	— fruition *read* friction.
107	7	— pricker *read* picker.
110	19	— require *read* acquire.
118	13	— close *read* lose.
119	18	— he's *read* he is.
121	10	— No. 1 *read* No. 6.
138	8	— elaboratory *read* elaborate.
148	12	— conjecture *read* conjuncture.
167	1	— retisuling *read* resulting.

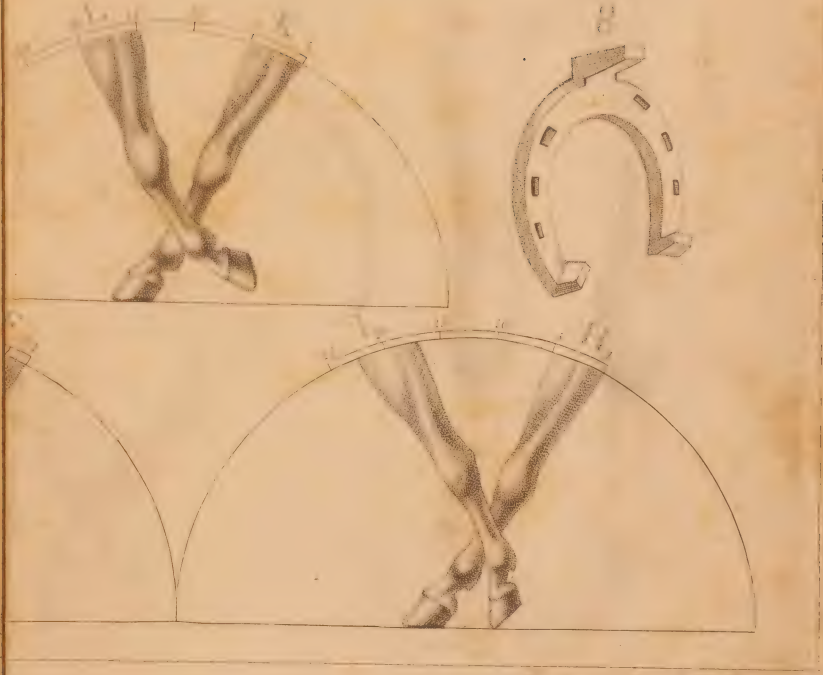

Plate 2.

N

M

O

P

H

N

Drawn by C. Lawrence

ADVERTISEMENT.

THE want of principles in the veterinary art, as also of some scientific work upon that subject, had made me resolve to publish the Elements of Comparative Anatomy, to serve as a foundation for the studies of the veterinary school; but being deeply impressed with a sense of the pernicious practice which at present obtains among farriers in the art of shoeing, I thought it my duty to apply myself, first of all, to this important point, on which entirely depends the destruction, or preservation of the foundations of the whole machine. With this view, I determined to publish my New Principles of the Horse-Shoe. I shall observe, that if any should apprehend that I have brought this new system from France, they are mistaken; and I believe it to be impossible to produce an instance of any country, in which the shoe I recommend for preserving the foot has been used; or of any author who has even described it. In support of what I advance, I have given a brass shoe, representing that employed in the veterinary schools of France (See Shoe No. 5). *It may*

he said, that my method of paring the hoof is not new, and that it has been described by other writers; this I do not deny, but I have carried farther than them the consequences I have drawn from the same principles. It may be also said, that I am not the first who has given an anatomical description of the foot. To this I do not pretend, nor is it possible to avoid repeating what others have said before me. Hence, then, there will be found an entire agreement between the fundamental principles I have laid down, and those in the little work of the Earl of Pembroke; which, to use a common expression, contains almost as much matter as words; as also those of the excellent treatise of Mr. Clark, which bears so great a resemblance to that last mentioned in what regards the art of shoeing, that they seem qualified to form but one volume. The accordance will be found as great with the principles of M. La Fosse, and of M. Bourgelat, to whom, in many particulars, I owe the tribute of just praise.

I am well aware, that my work will not escape the eye of criticism; and whenever such criticism shall be well founded, I shall receive its correction with thankfulness. But when it shall appear to be only a morose, or common-place censure, I shall observe a perfect silence, and repel it with profound contempt.

I have long foreseen the innumerable difficulties which accumulate before me; and I cannot say they surprize me. I feel myself, however, sufficiently bold to encounter them. The task which

my

my present situation imposes on me is great, but I shall exert every ability to fulfil it; and if the society, which now honours me with its confidence, shall continue for any length of time to do so, I shall make every effort to correspond with their candour, by rendering myself useful in my station.

N.B. I have inserted no anatomical plates in this work, because I consider them to be entirely inadequate to the purpose of instructing; and because I am convinced, that actual dissection alone can enable a student to obtain a proper knowledge of anatomy.

PRELIMINARY DISCOURSE.

THE branch of science which I have the honour to profess in this school, is altogether new in this country, and the name by which it is called, is but little known; it becomes indispensable, therefore, to communicate, for the information of the students, whatever may be learned upon that head.

Veterinary is a word derived from the Latin *veterinarius*; a term appropriated to express, either that part of medicine which regards the cure of morbid animals, or the persons who practice that cure. Several learned men have attempted to discover the origin

origin of the word, which, nevertheless, appears involved in great obscurity. Some have derived the word *veterinus* (from whence *veterinarius* has been formed) from vecto, to carry; "quasi animalia ad *vecturam* idonea;" or from *veho*; "veluti *vecterina*, vel *veheterina*." Others have deduced it from *venter*, the belly; because beasts of burthen carry their loads attached to their belly; "quod onus ad *ventrem* religatum gerit." They who wish to examine these learned attempts, may consult Gesner's edition of R. Stephen's Thesaurus; Fabricii biblioth. Latin. l. 3, c. 12, not.; and the note to Lucretius, lib. 5, l. 863, in Havercamp's edition. What the true etymon of the word may be, is a question of some philological intricacy, though but of little importance; it is sufficient here to say, that the word *veterinarius*, as used by Columella and Vegetius, signifies a practitioner in one particular part of medicine, namely that which respects the cure of diseased cattle; and that *ars veterinaria*, signifies the art of healing, applied to the healing of cattle.

The

The word *hippiatric*, is a compound term, formed of the Greek word, *hippos*, a horse; and *iatrice*, medicine. This word, therefore, expresses that part of medicine which treats of the cure of diseased horses in particular, and constitutes a principal branch of that division of medicine, which treats of the diseases incident to cattle in general, and to all other domestic animals.

We have undoubted evidence, that this art was cultivated in very early times. In the infancy of medicine, when the art of healing was confined to the rude elements of surgery, it was indiscriminately applied to the relief of all accidental distresses to which the animal frame was liable, whether they occured in man, or in those animals which constituted his wealth, or were the associates of his labours. In these times, many things concurred to attach the minds of men to the well-being of their cattle. They were almost solely used for tillage, and the dairy; and the life and health of the herds was an especial concern. It was forbid by an ancient law in Greece, under

under pain of severe penalties, to kill a labouring ox*. Cattle was the great medium of exchange, before the invention of coin †; and the riches of countries and individuals were estimated by the quantity of their cattle; whence we may reasonably infer a proportionate attention to their condition and preservation. And the laws of religion, which rigorously forbad the sacrificing of any animal, but such as were in the most perfect state of health and form‡, confirmed the necessity of giving due attention to that object.

Chiron the Thessalian, a personage whom antiquity held in extreme veneration, and who, from his transcendant skill in horsemanship, and many other useful arts, was called the wise Centaur, lived to the age of the Trojan war. This great man descends to us as the father of medicine, and the instructor

* Ælian. Var. Hiſt. lib. 5. De Animal, lib. 12. Varro de re Ruſticâ, lib. 2. Plin. lib. 8, cap. 45.

† Columella, lib. 6. Præm.—Smith's Wealth of Nations, vol. 1, p. 34.

‡ Archæologia Græca, Potter. lib. 2, c. 4.

of

of Æsculapius in that art. He was, on the concurrent testimony of antiquity*, profoundly skilled therein, as also in the care and management of cattle†; and although we may not affirm, that the treatise on the hippiatric art, which Suidas informs us was current among the antients under his name, was really his production, yet we may fairly infer, from their belief of it, their opinions of the importance and antiquity of that art, and of its intimate connection with general medicine. We meet in Xenophon with proof, that it had been cultivated before his time; in his treatise on horsemanship he cites Simon, an Athenian, who makes mention of Micon, who had applied himself to the study of this branch of medicine. Before the fate of Carthage, Mago had carried this, as well as every other branch of rural science so far, that Columella does not scruple to call him the father of Roman agriculture‡; his works were afterwards translated from the Punic

* Alb. Fabricius. vol. 13.
† Columella, lib. 1. Prœm.
‡ Columella, lib. 1. c. 1. Plin. Nat. Hift.

tongue by order of the Roman Senate. What remains of the antient writers upon this subject, are to be found among the *Scriptores Rei Ruſticæ*, published by Gasper; among the Greek collection entitled *Geoponica*, of which the edition of Niclas, printed lately at Leipsic, is the best, and among the *Hippiatrice*, published by J. Ruelle, at Paris, in 1537. These contain all that is preserved of Vegetius, Apsyrtus, Hierocles, and the most celebrated of the old veterinarians.

It would be to no purpose to trace the progress of this art minutely through all its vicissitudes; it is sufficient to say, that the decline of the Roman empire, and the decay of arts and science, occasioned for a time the destruction of this, as well as every other branch of knowledge. But, while veterinary medicine was lost in the west; and was declining fast in Greece, it found an asylum among the Arabians; a nation destined, it should seem, by providence to receive in trust the knowledge of Europe, until, emerged from the abject state into which it was plunged,

plunged, it was able to reassume its intellectual rank. This nation, which, among other parts of science, cultivated medicine with uncommon ardour, did not neglect this particular part of it, of which we are at present discoursing. This curious fact has entirely escaped M. M. Vitet and Amoreux, in their investigation of the writers on this subject. Herbelot, in his *Bibliotheque Orientale*, informs us, that there are many works on this subject in Arabic*, some of which are in the royal library at Paris. In the twelfth century, a period at which Arabian learning, especially medicine, was at its height, the Moors of Spain boasted Ibnu, *El Baitar* or *the Veterinarian*, a native of Malaga. This learned physician and botanist is spoken of as one of the great ornaments of his country, and of the age in which he lived. He travelled over Africa, Persia, and India, for the improvement of botany, in which excursion he added above two thousand new plants to the herbal of Dioscorides; he afterwards exercised his own profession in the service of the

* Herbelot. Biblioth. Orient. in Verb. *Beithar*—

Sultan Saladin, and died at his native Malaga in A. D. 1216*. He has left behind him a large treatise on the virtue of herbs; on poisons; on metals; and on animals; the whole reduced into alphabetical order, in three volumes. He is not the only learned Arab who has added to his name the quality of El Baitar, or Beitar, i. e. Veterinarius; from whence the Spaniards have borrowed the term of *Albeytar*, to signify the same thing; as from *El Beitarah*, they have formed *Albeyteria*, to signify, mulomedicina, or the veterinary art. Herbelot mentions also, Abubecre al Beithar, master of the horse to the Sultan Mohammed Ben Calann, who began to reign in Egypt, A. D. 1279, of the Hegira, 678†. He is author of a work on the medicine of horses, and on the art of breaking them, which is to be found in the royal library at Paris, marked No. 940, *Kamel al Sanatrin*‡. It is worthy of remark, that the Asiatics appear to have preserved that part of the manage-

* Biblioth. Arabico Hiſpan. tom. 1. Carter's Journey from Gibralter to Malag. v. 2. p. 239.

† Herbelot. in Verb. *Abubecre* and *Camel.*

‡ Herbelot. in Verb.

ment

ment of horses, which consists in their treatment when diseased, entirely separate from the business of the farrier; the confusion of which essentially distinct occupations, has been hitherto the bane of veterinary science, among us. In the establishment of Akber, the Mogul emperor, who lived in the end of the sixteenth century, we find the distinct office of, *Beitar*, or horse-physician; and *Nalbend*, or farrier*; and the Spaniards still distinguish between the Albeytar, and the *Herrador*, or farrier. From the Arabians (for so we may consider the Moors) the Spaniards derived their skill in this art, as well as their valuable breed of horses; which they wisely considered as an object worthy every effort of their medical abilities. And here we may in a few words observe, that if the Spanish writers upon this subject, who are numerous, have not enlarged the boundaries of veterinary science, they have at least this great merit, that they have formed a just opinion of its importance, and have made veterinary medicine keep pace uniformly with the condition of human medicine among them; so that their deficiency in medicine in

* Inſtitutes of Akber, tranſlated from the Perſian. v. 1. p. 177, 178.

general, is the real cause of their backwardness in this particular part of it.

It is not improbable, that the taste for science excited by the Arabians, and which as far as respected medicine, laid the foundation of the school of Salerno in Italy, may have been instrumental in rousing the attention of the curious to the veterinary art, but it is not to them that we immediately owe its recovery, especially in that improved state, in which it has began of late to shew itself in Europe. When learning began to revive, and the activity of genius to be excited for the restoration of science, the medicine of animals, as might be expected, was not an object of principal anxiety. On the contrary, it still continued in the debased condition in which it had so long subsisted, while the other arts, and among them the art of human medicine, began to make a hasty progress toward science. Thus neglected, it remained in the hands of those to whom ignorance had consigned it, and who being more conversant in horses, were supposed more capable of treating them in a morbid state.

state. These men availed themselves of the opportunity, and partly induced by vanity, partly by interest, openly professed themselves practitioners in this line. They worked on without principles, amassing whatever tradition preserved, encreasing their code of prescriptions by every novelty with which credulity and superstition provided them. Such was the general state of veterinary medicine at home and abroad at the beginning of the sixteenth century, when Francis the first of France gave orders to J. Ruelle, his physician, a canon of Paris, to collect together, from the writings of the antients, whatever might tend to improve this neglected division of the art; which collection was soon after made, and printed at Paris; first in Latin, in 1530, by the title of *Veterinariæ Medicinæ Scriptores Græci*, in fol. and afterwards in Greek, in 1537. This publication, and the books of Vegetius, which had been lately printed at Basil, began to be read by the learned, and the ardour for perusing the writings of the antients, which in that age strongly prevailed, gave them a value beyond what their intrinsic worth, perhaps, had deserved

served. They, however, began to excite the attention of the curious, among the faculty, and to convince them of the importance of veterinary medicine, properly conducted, to the cause of medicine in general. Hitherto, the system of practical farriery had derived no real service from these acquisitions to the studies of the curious, but it might have been safely predicted, that from the period when men of learning and science deigned to consider its condition, it would, sooner or later, begin to improve. The exertions made for this purpose were, indeed, few; but it was presently perceived, that attention to veterinary science, was of all methods the best calculated to promote comparative anatomy. Accordingly, towards the close of the same century, we find J. Heurnius, otherwise Van Heurn, a learned professor of medicine in the university of Leyden, recommending to his medical students to peruse the writers upon this subject. "Animi causa," says he, "inspicias etiam interdum Geoponicos, et Hippiatros.*"

* De Studio Medicinæ bene instituendo, Differt.

And

And a few years after Heurnius, the great Lord Bacon, sensible of the service which had been rendered to medicine by zootomy with a view to comparative anatomy, makes the following observation. "In the inquiry which is made by anatomy, it is true which was antiently noted, that the more subtile appear not in anatomies, because they are shut and latent in dead bodies, but open and manifest in life, which being supposed, though the inhumanity of this *anatomia vivorum* was by Celsus justly reprobated, yet in regard of the great use of this observation, the inquiry needed not by him so slightly to have been relinquished altogether, or referred to the casual practices of surgery, but might have been well diverted upon the dissection of beasts alive, which, notwithstanding the dissimilitudes of their parts, may sufficiently satisfy the enquiry*." And in the middle of the following century, Mr. Boyle urges it in still stronger terms, and considers it, both according to its direct object, and its collateral advantages. The diligence

* Advancement of Learning, book 2.

of zootomists," says he, "may much contribute to illustrate the doctrine of androtomy, and both inform physicians of the true use of the parts of the human body, and help to decide divers anatomical controversies. For, as in general it is scarce possible to learn the true nature of any creature from the consideration of the single creature itself; so particularly of divers parts of the human body, it is very difficult to learn the true use, without consulting the bodies of other animals, wherein the part inquired after is by nature either entirely left out as needless, or wherein its different bigness, or situation, or figure, or connection with, and relation to other parts, may render its use more conspicuous, or at least more discernable." And further; "It would be no new thing for naturalists, not professedly physicians, to treat of this subject; the naturalist may afford good hints to the practitioners of physic, by trying upon brutes variety of hitherto untried medicaments or remedies, and by suggesting to him both the events of such trials, and also what hath been already observed about the cure of diseases incident

to

to beasts." And again, "The skilfullest physicians might, without disparagement to their profession, do it an useful piece of service, if they would be pleased to collect, and digest all the approved experiments and practices of farriers, graziers, butchers and the like, which the antients did not despise, but honoured with the titles of *hippiatrica* and *veterinaria*; and among which, if I had leisure, divers things may be taken notice of, which might serve to illustrate the *methodus medendi**." These are a few of the sentiments of ingenious men, selected of many; but they are sufficient to prove, that from the period at which veterinary medicine first attracted the notice of the learned, it grew more and more an object of their attention. I shall follow the progress of this opinion no farther, but shall observe, that after a course of many years, the government of France undertook to give effectual assistance and protection to this most useful part of domestic science, and to provide for it the same advantages by which medicine had been formerly advanced.

* Boyle, vol. 2. p. 169. 4to.

It will not be out of place to give here some account of the means which the French government employed in order to bring about the desireable end; which justly entitles France to the same honours, with respect to the veterinary art, which the world must ever concede to the school of Salerno with respect to medicine; namely, of having first reduced the principles of that art to a foundation of regular science. On the 5th of August, 1761, the council of state issued a decree, empowering Mr. Bourgelat to establish in the city of Lyons a school, in which might be taught the knowledge and treatment of diseases incident to cattle of every description. M. Bourgelat published, without loss of time, a plan of the new establishment, which was well received by the public, and spoken of in the best journals with the greatest applause.

Sensible of the advantage that must result from such an institution, government granted the sum of 50,000 livres, or about 2083l. sterling, payable in six years, at the annual rate of 8333 livres, to defray the expences

expences of house-rent; providing a laboratory, dispensary, physic garden; stables to serve as hospitals; forges, instruments,and utensils; also rooms for study and dissection; in a word, every thing that might serve to render the establishment complete. The smallness of the sum granted will appear the less extraordinary, when it is known, that it had been always intended to apply the produce arising from the hospitals, forges, and dispensary, entirely to the support of the school.

The first school was opened on the 1st of January 1762; it was very soon stocked with native students, and a short time after the numbers were increased by foreigners, among whom were several supported by the Empress Queen, the kings of Denmark, Sweden, Prussia and Sardinia, and the different Swiss cantons. The institution gave early proofs of its utility, in the signal services it rendered to the inhabitants of the country, by affording, on frequent occasions very effectual assistance in cases of epizootic or contagious distempers, and many other particular

cular diseases, to which the brute creation, especially in a state of domesticity, are unfortunately too subject. This determined the king to grant by a decree of the 31st of June, 1764, a special mark of his satisfaction, by permitting it to assume the title of royal veterinary school. At the same time, his majesty conferred on M. Bourgelat the brevet of director and inspector general of the royal veterinary school of Lyons, and of all other similar schools to be hereafter established in the kingdom; and having given orders that several other schools should be formed upon the same plan as that at Lyons, and especially one in the neighbourhood of the capital, the castle appeared, by its situation and extent, and by the conveniences which the different structures already erected offered, the most eligible place for the second projected establishment.

This building was obtained by purchase in Dec. 1765. M. Bourgelat immediately invited some of the students from Lyons, who had made the greatest progress in the art, placed them for the winter in Paris,

Paris, and employed them in dissecting and making anatomical preparations of various kinds, which at the opening of the school, served as proofs of the abilities of the pupils he had trained up. In the mean while apartments were building at the new school, capable of receiving 90 students, with dissecting room, laboratory, physic garden, &c. and hospitals able to contain 100 animals, affected with various diseases; the whole of which was completed in October following. Since that time, a riding-house has been added, that nothing might be omitted, which could contribute to the better instruction of the pupils; and the place has been adorned with a variety of curious and useful animals from different parts; such as rams and goats, from Spain, India, the Cape, Barbary, and Angola; cows from different countries, &c. by which the students are furnished with an opportunity, not only of knowing the greater parts of the diseases incident to these different animals, but also of making experiments and observations capable of extending veterinary knowledge. For the same purpose,

purpose, a flock of sheep, and other domestic animals are constantly kept in exhibition.

The interests of rural life were not alone promoted by this establishment, the different corps of cavalry also have repeatedly experienced its benefits. In 1769, each regiment sent a person to be instructed in the school, which persons were quartered in the neighbourhood, and a regulation of the 15th October of the same year provided, that the barracks should be under the direction of a commanding officer, and the studies and interior discipline of the school, should be regulated by the director and inspector general, and by the assistant director. With a view to perpetuate this advantage to the army with less expence, and to provide a constant succession of persons really qualified to serve as farriers in the different regiments, a new regulation of February 1774, confirmed in part that of 1769, but provided, that the military pupils should be reduced to the number of twenty, and lodged in less expensive quarters, situated

situated neaer to the school, and that no more should be sent from the regiments; and the commanding officer was ordered to engage journeymen farriers to serve in the heavy and light horse, and to present them, preferably to all others, to the director and inspector general; and the same regulation appointed the discipline by which the military pupils were to be governed. With respect to the other students, in order to provide against the obstacles they might encounter in the provinces where they proposed to profess veterinary medicine, a decree was issued, enacting, that all pupils of veterinary schools, who, for the space of four years successively, should have gone through their regular course of study, should be permitted to profess that art in the places where they might fix their residence, or wherever else they might be occasionally called.

The expences attending this school, under the ancient government, including the appointments of the director general, professors, and other officers; ground rents, repairs, and all other contingencies; amounted

annually to the sum of 60,000 livres, or 2500l. sterling. These expences were afterwards reduced by the National Assembly.

On the 1st July, 1790, the school at Alford consisted of the following officers.

GOVERNORS.

The Controler General of the finance.
The Intendant of the finance.

DIRECTORS AND PROFESSORS.

Director and Inspector General.
Assistant Director, professor of anatomy and operations.
Professor of materia medica, having the care of the dispensary.
Professor of the exterior knowledge of animals, &c,
Professor, charged with the care of the hospitals.
Professor, having the care of the forges.
A Chaplain and Surgeon.
A Commanding Officer, with his corps.
A Commandant in second------A Commissary.

A report was made in the National Assembly by their committee of finance, of the state of the veterinary schools, and it appeared in the printed account, that the annual expence of these schools amounted together to the sum of 72,000 livres, or 3000l. sterling.

In the following detail, the school of Lyons is not included. From the year 1765 to 1782, the annual expence of Paris school amounted to the sum of 60,000 livres. From 1782 to August 1787, the expences exceeded all bounds, and a debt was contracted exceeding 300,000 livres. Since the year 1787, the ordinary expences were fixed at 42,000 livres, or nearly 1350l. sterling. It must be observed, that a farm which cost 200,000 livres, or above 8000l. sterling, was annexed to the school, the produce of which it entirely consumes. It was proposed to the committee to transfer the school to Paris, but the proposal was rejected, because the pupils met with fewer avocations, and less interruption from their studies in their present situation;

and because the academical appearance of the place had a tendency to ennoble the studies, and to elevate the minds of the young people. The only object now was to fix the expences, and the following establishment was decreed.

	livres.	
A Director at - - - - - -	11,000	
A Coadjutor performing the functions of professor of anatomy	5,000	
Three other professors, each at	2,000	
A porter - - - - - - -	300	
Anatomical expences - - -	1,200	
Expences attending the museum	600	
Forges - - - - - - - -	1,200	
Expences for printing - -	400	
For reparations of the building	3,000	
		£. s.
Total	28,000	or 1,166 16

Besides the foreign students supported by the crowned heads above mentioned, there were several from

from different countries, who studied in these schools on their own private account. "From every country in Europe," says Mr. Arthur Young, "except England; a strange exception, considering how grossly ignorant our farriers are, and that the whole expences of supporting a young man here, does not exceed 40 livres a year; nor more than four years necessary for his complete instruction."*

But those princes were not satisfied with sending pupils to study in France, they presently thought of providing similar institutions at home; and, accordingly, one was soon afterwards established at Vienna; another in Denmark; others in Sweden, Prussia, and Piedmont; and one also, by his present majesty, in the electorate of Hanover. We may now add, that England is at length in possession of an establishment of the same nature; and one that, while it does that honour to the nation, which most of its public institutions confer, from being the work of individual ex-

* Travels in France. p. 67.

ertions,

ertions, supported by general opulence and discernment, appears likely, from its particular constitution, to render especial services to the art it protects. Two things, however, it will be essentially necessary to attend to, in the infant state of the institution; the one, to give a free and unembarrassed scope of acting to those who are charged with the arduous task of preparing the elements of a new science, and resisting the force of inveterate prejudice; the other, to exclude from the tuition of the youth, all persons partially, and not fundamentally, versed in the science; such as have a confined, and general acquaintance only, either with farriery or surgery: for otherwise, the stream will be immediately obstructed in its course, the fountain-head of the science will be disturbed and obscured; and those very errors and systems, which ought by every method to be excluded from the school, will be interwoven with its first and fundamental principles.

It remains for me now to give the reader, unconnected with the college, some account of myself, and

and of the situation which I have the honor to hold in this country.

Being superseded in a promotion which I had a right to expect, through the then master of the horse to the king of France, I resolved to come over to England, and to pass some time in observing the state of rural economy in this country, in examining the different breeds of cattle, and especially horses; in a word, whatever had any relation to the principal objects of my favourite profession. I communicated my design to M. Broussonet, M. D. perpetual secretary to the Royal Society of Agriculture in Paris, and fellow of the Royal Society of London. His reply to me was remarkable. He told me, that if I went to England with the above intentions, I should be astonished at the beauty and value of the domestic animals of all kinds, and that I should find agriculture in the highest state of perfection; but that I should find the veterinary art totally neglected. But, he added, that if I were inclined to risk some proposals for improving that art, he would almost undertake

take to answer for their being well received. He gave me letters of recommendation to Sir Joseph Banks, Bart. and to Dr. Simmons. Thus encouraged, I came to England, in June, 1788. Two months after my arrival in London, I published proposals for forming a veterinary school, but they produced no effect. This disappointment, however, did not destroy my hopes, for in the month of October, 1789, I published fresh proposals, to read lectures on the veterinary art. These proposals met with no better success, and I confess this second disappointment nearly disheartened me. I endeavoured to trace the secret causes which so stubbornly resisted my success, and I soon perceived, that the opulence and mild government of England offered an endless field to foreign adventurers of every description, by whom the nation was daily imposed upon; and that repeated experience of such impositions must naturally excite mistrust towards foreigners in general; and as the honesty of my views was not written on my face, patience and perseverance became my only resource.

About

About this time I had the good fortune to become acquainted with a gentleman, who was led, by a decided taste for the art, and a long desire of seeing it introduced into his own country, to engage in frequent discussions with me on the subject; I made him acquainted with the whole of my plans, and of the little encouragement I had met with. This gentleman eagerly corresponded to my views, and bid me not despair of success, assuring me, that by persisting in my proposals, the reason of the thing would, sooner or later, carry the victory. He had also the friendship to give me particular assistance in drawing up proposals, better adapted to the customs and genius of the nation, which represented, in an able manner, the advantage of studying the veterinary art; these proposals were distributed in May 1790, and consisted of 28 pages in octavo, entitled; "Plan for establishing an institution to cultivate and teach veterinary medicine."* I carried several of them to Newmarket, where they were well received, and I brought back the names of a few subscribers.

* See Dr. Simmon's Journal.

About the end of May, I sent several copies to the societies at Odiham, Bath, and Manchester. The former society had, some time before, proposed to send two pupils annually to study in the schools of France, and had opened a fund for the improvement of farriery. On the receipt of my plan, they did me the honour to pass a resolution of approbation, and to elect me an honorary member of their society, and they expressed their opinion of the expediency of establishing an institution similar to those in France, Germany, &c. I added a few names to my subscribers, and deferred taking any further step till the following winter. During this interval, the Odiham society proposed a premium for the best treatise on the glanders, and appointed a committee to meet at the Blenheim coffee-house, to consider of the best method of improving farriery.

This committee met in the close of the year 1790, two treatises only were presented, one by their zealous and respectable vice-precident, the late Sir William Fordyce, and the other by myself. Several meetings

meetings took place, without any thing very effectual being done, till at length, in one of these meetings, the committee passed a resolution to the following purpose. That they had observed the good effect produced on the public mind by the exertions of the Odiham society for the improvement of farriery, and by my plan proposed, for establishing a public institution for that purpose; that the object of that society was one and the same with that contained in my plan; and that the two schemes ought to be consolidated into one. This was done, and I was appointed professor. A few days after, the committee, by another resolution, detached themselves entirely from the Odiham society; and erected themselves into an independent society (assigning the reasons for taking that step) by the name of, the Veterinary College, London.

This is a simple and fair statement of the case, and of the origin of the Veterinary College; as the gentlemen who uniformly attended, and the official books of the society, can fully evidence. I shall now,

before I close this discourse, produce, in proof of what has been above advanced, a few examples of the benefits which mankind at different times have derived, both in the enlargement of their anatomical knowledge, and the improvement of the method of healing, from an inspection into the structure of different animals, and from experiments made upon them in a morbid state.

We know that the physicians of all ages applied themselves to the dissection of animals, and that it was almost entirely by analogy, that those of Greece and Rome judged of the structure of the human body. We are told, indeed, that Herophilus and Erasistratus studied anatomy on the human frame, some centuries before the Christian æra, and that the former even dissected living subjects, having obtained the bodies of malefactors for that purpose; but it does not appear that this practice was continued. On the other hand, it is abundantly proved from history, that the great progress of anatomy, till within a very few centuries, was made by the dissection of brutes.

brutes. In Egypt and the east, as also in Greece and Rome, the dissection of the human body was held in abhorrence; nor could any one dare to attempt it, without offending against the authority of the law, or the more formidable authority of public opinion. This superstitious reverence for the dead, which prevailed for many centuries, confined both the Greeks and Arabians to the dissection of apes, and quadrupeds.* Galen has given us the anatomy of the ape, for that of man: and it is clear that his dissections were restricted to brutes, when he says, that if very learned physicians have been guilty of gross errors, it was, because they neglected to dissect animals. The dissection of the human frame was accounted sacrilegious in the time of Francis the first of France; and the Emperor Charles the fifth proposed the question to the theologians of Salamanca,† whether it was lawful to open a human body, in order to become acquainted with its structure. "Which is the less to be wondered at," says

* Gibbon, Decline of Rom. Emp. ch. 52.

† Coutumes des Peuples, par M. Démeunier. tom. 3. p. 255.

Mr.

Mr. Boyle, " because, even in this our age, that great people the Moscovites have denied physicians the use of anatomy and skeletons; the former as an inhuman thing; the latter as fit for little but witchcraft." And he mentions one Quirin, an excellent German surgeon, who being found with a skeleton in Muscovy, hardly escaped with his life; and his skeleton which he was obliged to leave behind him, was burned.* During these superstitious times, however, the foundation of anatomical knowledge was laid; and if we are to regret those prejudices which so long opposed that perfection of the science to which it has since attained, we are no less to admire the compass of anatomical knowledge which zootomy, and the study of the organization of brutes, was able to afford. The same Mr. Boyle, having occasion to mention the scruples we have been speaking of, observes; " It was perhaps on some such account that Aristotle said, that the external parts of the body were best known in man, the internal in beasts." It

* Boyle. v. 2. p. 68. Uſefulneſs of Nat. Philoſophy.

would

would be no difficult task to give a regular chronological account of the progress of comparative anatomy, and of the anatomists who applied themselves to that study, but as I do not pretend to write here the history of that science, I shall at present confine myself to the names of a few principal persons, and of the discoveries they made by means of zootomy.

Erasistratus was the first who observed the lacteal veins in kids, which he opened a short time after they had sucked; he observed the valves of the heart; and demonstrated, contrary to the opinion of Plato, that there was, behind the tracheal artery, or windpipe, a canal or passage, viz. the æsophagus, whose office was to convey food into the stomach. Rufus of Ephesus, we are told, described those two parts, the discovery of which is attributed to Fallopius, and from him are called the *Fallopian tubes*, in the second century; these he discovered in dissecting the womb of an ewe, and adds, "That he strongly suspects them to be seminal vessels, and of the same nature with those

those in males, called the *varicous parastate.*"* Galen demonstrated at Rome on living animals, the organs of sound, and respiration, he made several observations on the brain of animals, he also shewed the nerve *recurrens*, and the effect produced by the ligature of that nerve. Vesalius shewed, by experiments on animals, that it was possible to restore suspended animation, by blowing warm air into the trachean artery; which discovery has saved the lives of many individuals. Croon and Hook, two English physicians, repeated the same experiments a century afterwards, and always with success. Wharton, a physician of London, discovered the salivary glands in an ox, in 1659. Eustachius was the first who found out the thoracic duct in the horse, and an hundred years after, the same canal was discovered in man. The immortal Harvey, assisted by experiments made on living animals, effected a total revolution in medicine, by the famous discovery of the circulation of the blood. Dr. Wren, professor in the university of

* Dutens Enquiry, &c. p. 223.

Oxford,

Oxford, made several experiments on living animals, to be assured of the effects of different substances on the blood and solid parts, the result of which experiments was, to confirm the discovery of Harvey, which for the space of forty years, was strenuously opposed.

Gaspar Aselius, professor of anatomy at Pavia, repeated the discovery of the lacteal veins in the messentary, in brute bodies, which had formerly been known to Erasistratus and Herophilus. Pecquet traced them in the thorax, and completed his discovery by that of the thoracic duct in 1647. It was in the bodies of brutes, also, that Bartholinus discovered the *vasa lymphatica*. Stenon, a native of Copenhagen, but afterwards physician to Ferdinand the second, grand duke of Tuscany, discovered in 1661 the excretory ducts of the lacrymal gland in the eye of a sheep. Malpighi, and Bellini in 1765 described the organs of taste and speech, from the dissections of quadrupeds; but here, analogy led them into some errors. Malpighi's observations on the organ of

feeling, were first made on the skins of brutes, and afterwards verified on the human skin. Weiff made experiments on the hearts of living animals, to prove that the auricles were equal. In 1641, Maurice Hoffman, professor of physic at Altdroff, discovered the excretory duct of the pancreas in a turkey-cock. The peristaltic motion of the intestines was first discovered in animals. In a word, the greater part of the functions of the human frame were first made known by the general analogy subsisting between the functions of animal organization. I shall forbear speaking of repeated experiments which have been made on these same animals, with a view to explain those phœnomena, the causes of which nature seems to have entirely removed from our comprehension, such as the mystery of muscular motion, of generation, and of the real functions of the brain, &c. All these fruitless endeavours have given rise to systems, which proved infinitely more prejudicial than useful to the science they pretended to illustrate. With regard to the advantages which have resulted to the healing art, from observations or experiments made

on

on the bodies of diseased brutes, it would be unseasonable in this place to enter into a prolix account, which would extend too far the limits of this discourse. It is well known that the first purgative medicine was hellebore, which is said in ancient history to have been discovered by Melampus, who observed the effect it produced in his goats. Many such accidental observations, as well as curious experiments, have improved the means of healing. I shall close this account with the testimony of the learned Dr. Freind, who, speaking of the use of the seton, which was in vogue in the twelfth and thirteenth centuries, both in the east and Europe, concludes thus. "I the rather mention this, because it seems to be not improbable that this hint, as many others have been, was at first taken from a practice very common among cattle-doctors. Columella, who wrote in Claudius's time, describes the operation very fully and elegantly, in these words. *Præsens etiam remedium, &c.* The method here used is still in vogue with the herdsmen; and what is proposed by Columella, is with regard to the plague, or some

epidemical infection among cows; and accordingly we find, that the same remedy by issues was afterwards applied to a human body in the same distemper; first by J. Arculanus, who flourished in the fifteenth century; and from his example, several physicians in the succeeding age, recommended them as one of the most effectual preservatives in that terrible case."*

From all that has been said, though in a summary manner, it appears, that the science we are here to cultivate, is able in itself, and has given unequivocal proofs of its ability, to enlarge the boundaries of general medicine. It is to be considered, however, at present, but in an infant state; and it is our duty to secure ourselves against the contagion of system and hypothesis. To effect this, it will be our constant care to adopt nothing but what shall have been faithfully examined and proved; to demonstrate nothing but what the understandings of the pupils may fully

* Freind's Hift. of Phyfic. v. 1. p. 45.

apprehend;

apprehend; and to adhere rigorously to the elementary principles of the science. The result of which will be, a simple theory, upon which they will one day be able to establish an enlightened practice, supported by observation and experience.

LECTURES

LECTURES

ON THE

ART OF FERRIERY, OR FARRIERY.

LECTURE I.

LECTURES

ON THE

ART OF FERRIERY, OR FARRIERY.*

LECTURE I.

CONTAINING

The External and Internal Description of the Foot.

GENTLEMEN,

IT would be a total loss of time, at present, to attempt to trace the art of shoeing to its origin. It is well known that ancient writers have left us no information on this branch

* The word *ferriery*, from whence by corruption *farriery* has been formed, signifies strictly, the art of working in iron; but custom has appropriated it to express that branch of smithery which is employed in forging shoes for horses, oxen, &c. It is derived from the French *ferrare*, which is borrowed from the Latin, *ferrarius*, or what pertains to iron. Thus, *ars ferraria*, signifies the art of working in iron generally, and is by Pliny said to have been first invented by the Cyclops; "Fabricam ferrarium invenere Cyclopes." A concurrence of circumstances have with us attached to the word *farriery* an idea of medical practice, which is totally foreign to the genuine meaning of the word. Janius. Etymol. Anglican. Ferriour.

of the veterinary art; and, to produce the passages of authors in which they cursorily mention the horse-shoe, only in order to shew that those passages afford us no instruction, would be making a display of a vain and impertinent erudition. Since then, the antients have contributed nothing to our improvements in this particular, and the moderns but very little, we have no other resource than in our own enquiries, by means of which it is our business to endeavour, in the first instance, to obtain a thorough knowledge of the external form, and internal organization of the part which forms the basis of the whole animal machine, and which is known by the general appellation of the foot.

If nature has rendered elastic those organs whose office it is to move parts of themselves immoveable, she has no less wisely given solidity to others, whose duty it is to support the weight of the whole fabric.

The fibres which compose the foot are intimately united together, and form by their assemblage different

ent plans, the particular arrangements of which determine the density, form, and use, of the parts which they compose.

Those which descend from the coronet to the lower circumference of the hoof, form what is called the wall, or crust of the foot; others, with the appearance of flattened lamina, or thin plates, lying one above another, compose the sole; and the fibres which constitute the frog follow, in some degree, the direction of that part.

Several anatomists have taken the trouble to create systems in order to explain the origin of the human nail; instead of following their example, let it be our object to exclude from our enquiries every systematical notion, which far from bringing us conviction, would but lead us into obscurity and error. Whereas, by confining ourselves to the exposition of such things only as are obvious to our senses, we shall in all probability avoid the mistakes of those,

who endeavour to pass beyond the limits assigned by nature to every effort of human investigation.

To form an idea of the different degrees of density observable in the hoof, we must divide it perpendicularly, from the coronet to the toe.

We shall then perceive, that the internal surface of the wall, or crust, is lined by a laminated substance, in which blood-vessels branch out *ad infinitum.*

These vessels, which probably degenerate into serous and lymphatic vessels, penetrate into the substance of the hoof; convey to it the nutritious juice; and contribute to the formation of an highly irritable part; commonly called, the quick.

On examining still farther into the substance of the wall, or crust, we no longer distinguish blood-vessels, but discover a porous substance, more compact than the

the former; from whence exudes a moisture, intended, no doubt, to maintain a degree of constant pliancy in the part.

On continuing our examination, we come to a substance absolutely senseless, and, to appearance, dead; more or less hard; and destined to protect the sensible parts within, from the injuries they would otherwise receive from the hard bodies on which the animal is obliged to tread.

By attending to the general laws of the growth and nourishment of the nail we shall perceive that the hoof grows from the top, downwards; and from within, outwardly; and not, as many farriers have supposed, from its lower surface; so that the internal part, pushes forward the middle part, and takes its place; while the latter, in its turn, is converted into the dead and horny substance, which time naturally destroys. This constant destruction and reproduction, is the same in all organized bodies; and it is perhaps the most wonderful operation in nature.

As

As to the shape of the foot, we know that it exhibits the segment of an oval, opened at the back, and nearly round in front; that it is divided into the toe, or anterior part; the quarters or lateral parts; the heels, or posterior parts; and the sole and frog, or inferior parts.

It requires no great knowledge of horses to be able to judge whether the foot is proportioned to the leg. By observing the shape of a horse, and by comparing the size of the leg with that of the body, we may sufficiently perceive whether the hoof be too large, or too wide, too long, or too short, too little, or too narrow. The particular disadvantages attending which defects I shall here endeavour to explain.

If the hoof be too large and too wide, it will indeed increase the stability and firmness of the fabric, while in a state of inaction, because in this case, each of the columns and supporters presents a greater extent of surface to the ground; but this partial advantage grows

grows into an evil when it is applied to a body capable of *translation**, and considered in a state of actual motion; because then, the mass and weight of th foot, overburthens the muscles of the extremity, and retards the progress of the animal. Besides, the excessive bulk of the foot is a proof of greater or less relaxation in the texture of those fibres which compose it, in which case, the diameters of the vessels are increased, the porosities are multiplied, and the fluids abound in them in too great quantities; consequently, this kind of foot is soft, tender, and sensible.

On the other hand, too small a foot, by not presenting sufficient surface to the ground, renders the

* It has been impossible to avoid introducing the words *translation, progression, percussion.* Though these words may, in the opinion of some, appear too scientific for the subject, yet it will be found, that in considering the motions of animals according to the laws of mechanics, and expressing them with the accuracy which those laws demand, it was not possible to employ more familiar terms without degrading the subject, and adding nothing to its perspicuity. For a fuller conviction of the necessity of recurring to these terms, both in order to speak and to be understood with accuracy, the reader may consult the ingenious work of the celebrated Borelli, "*de motu animalium.*"

leg

leg less stable and firm. In feet of this description, from the too close union and too great tension of the fibres, the vessels destined to conduct the nutritious fluid are contracted and obliterated; whence proceeds that dryness in the part, which renders the horn brittle, and liable to split. When the foot is too long and narrow, the heels are generally more or less contracted, and the weight of the body is thrown upon them; and the length of the toe acting as an obstacle to the animal in its *progression*, renders it liable frequently to stumble, and even to fall.

Sometimes the heels are very low, as in horses that have flat feet, and the nourishment is entirely carried to the toe at the expence of the other parts; and this fault is increased if the horse is too long jointed in the fetlock, because its immediate effect is, to transfer the point on which the foot should bear, entirely to the heels.

When the foot is too short, the heels are generally raised too high; and this double defect, renders the

the basis of the extremity too narrow, and throws the fetlock joint too forward, and too near the perpendicular; by which means the horse is rendered too strait on his legs, and is in continual danger of falling.

If the pastern and the coronet are also too short, a fault we express, by saying the horse is too short jointed, the defect we are speaking of becomes very considerable, since the animal is then thrown entirely straight upon his legs,

But it is not sufficient to observe the general defects of the foot, it is necessary also for us to examine separately its several constituent parts, in order that we may be able to discover, whether they mutually and completely support the weight with which they are loaded.

The direction of the exterior surface of the hoof, or crust, should be moderately inclined; the surface itself should be smooth and even, and free from all

irregularities or wrinkles, which prove that there is some derangement, more or less, in the part under observation.

The thickness of the hoof ought to be proportioned to the bulk of the foot. In the fore feet, it ought always to be thicker at the toe, than at the quarters and heels; in the hind feet, on the contrary, the heels and quarters are generally thicker than the toe.

The quarters should be equal in their height, and be neither very much contracted, nor very open. All farriers know also, that the inward quarter is always weaker than the outward.

The heels occupy the hinder part of the foot. They should be neither very high nor low, nor very thin. When they are very high, they throw the weight of the body forward on the toe, and produce the same effects which have been shewn to result from too short a foot, and too short joints.

When

When, on the contrary, the heals are very low, the frog is in general proportionably too large: and this part being obliged to sustain too large a share of the weight, is often so much bruised and injured as to render the animal lame.

In speaking of too long a foot it appeared, that if the fetlock joint was too long, it produced the same effect, and occasioned the same inconvenience, as if the heels were too low; but here it is of very great importance to distinguish, whether the heels are naturally too low, or have been rendered so by the mismanagement of the farrier; as will be demonstrated in the course of these lectures.

The heels may also be too thin, in which case they are flexible and weak, and sensibly affected by the slightest pressure, which renders the horse lame. Here also it is necessary to examine, whether this thinness is natural, or has been occasioned by an accidental cause.

The frog, which is placed between the heels, and of which it is the continuation, has the form of a V.*

Its size should be proportioned to that of the other parts of the foot. Its substance is spungy, and less compact than the sole.

Too large a frog, whose surface descends below the level of the heels, sustains too great a share of the weight of the body; and the constant pressure it endures from the hard substances to which it is exposed, renders it liable to such bruises, as may eventually occasion a total lameness.

* The French call this part *la fourchette*, or the *fork*, from its forked appearance; but leaſt the reader ſhould ſuſpect that the word *frog* is a corruption of *fork*, to which both the name and form of the part bears a great analogy, it may not be amiſs to acquaint him, that this part was called, both among the Greeks and Romans, by a word which ſignified a frog; the former calling it βατραχος, the latter, *ranula*. Apſyrtus, deſcribing a horſe perfect in all its parts, requires it to have, *a ſmall frog*, and a hard hoof. Where the note obſerves, "βατραχος dicitur pars in media ungulâ tenerrima." Vegetius calls this part by the name of *ranula*, or little frog.

On

On the other hand, when this part is too small, and does not reach the level of the heels, it does not receive the share of the weight which it is designed to support, and the heels are deprived of a part, which contributes to maintain their natural extension.

The sole is that part which covers the whole inferior surface of the foot, excepting the frog. The form of the sole should be moderately concave; too great a concavity indicates a foot, contracted and dry. A sole that is full, and level with the quarters, denotes a soft and relaxed foot; but it happens in common, that the foot exhibits a hoof, more or less dried, while at the same time the sole is soft, thin, and without consistence. This fault is occasioned by too free an use of the farrier's butress.

We shall be thoroughly convinced of this truth, if we observe, that few horses are foaled with a natural propensity to flat feet, excepting a few, bred in low and marshy lands. The art of farriery, however, is competent to check even this natural disposition, which

which the bad practice of the present day only serves to increase.

The sole sometimes descends below the level of the quarters, and presents a convex surface. This form which is of all others the most defective, is occasioned by some accidental cause.

Of the exterior parts which compose the foot, it remains only to speak of the arches, or binders, which are situated between the heels and the frog. They are formed by the continuation of the fibres of the heels, which turn towards each other; and, advancing to the extremity of the frog, where they meet, form an acute angle; and acting by mutual resistance from within, outwardly oppose the contraction of the heels.

The knowledge of the external parts of the foot, however necessary, is not sufficient to form a skilful farrier. He must investigate beyond the horny case we have just examined, and make himself well acquainted

quainted with the nature, arrangement, and use, of the parts which it contains. This knowledge will not only prove a sure guide to him in shoeing, but will very frequently also lay open to him the secret cause of many a lameness, which reduce ignorant practitioners to a state of irrecoverable perplexity.

The foot is composed of hard and soft parts. We shall begin with the former.

The bone of the foot is placed in the interior part of the hoof. Its substance is spungy, it has the form of a half moon; and presents three different surfaces, and two edges or rims. The upper surface is subdivided into two smaller ones, which receive the coronet bone. The anterior one is round, corresponding to the external form of the toe; which surface is covered with the laminated substance of which I shall speak hereafter.

The under surface is concave and is in part lined by the aponeurosis of the flexor muscle of the foot, and by the fleshy sole.

Two holes are to be observed, through which vessels pass, distributing themselves into the substance of the bone. Besides these, there are a multitude of porosities dispersed throughout the whole extent of the surface.

The edges are two in number; the upper one corresponding with the coronet, and presenting three eminences; in the middle, and on each side. To the first, the extensor-muscles of the foot are attached. The other two terminate laterally the edge just mentioned. The lower and sharp edge corresponds to the outline of the toe. The articular bone, which is called by some, the shuttle bone, on account of its resemblance to a weaver's shuttle, is situated at the inferior or lower part of the articulation of the coronet, and the bone of the foot. It presents two small surfaces, which form an articulation with the bone of the coronet. The irregularities observable on the other parts of the surface, give occasion to the insertion of the ligaments.

Over

Over the two upper extremities of the bone of the foot are two cartilages, which extend from the insertion of the tendon of the extensor muscle of the foot, to the hinder part of the heels. Their shape is nearly semi-lunar, and they adhere strongly to the bone on which they tie. They are perforated by several holes, which serve as a passage to vessels. These cartilages are sometimes ossified in old horses.

We give the name of laminated substance, to a multitude of membraneous plates, which are pretty strong, lining on the one part the internal surface of the wall or crust, of which they are an appendage; and covering on the other part, the whole anterior surface of the bone of the foot. These lamina being double, interweave with one another, so as to establish a perfect union between the hoof and that bone.

The fleshy sole, covers part of the inferior surface of the bone of the foot; and is itself covered by the horny sole. It adheres at its circumference to the laminated substance by means of fibres and ves-

sels. The hinder part of the surface of the bone of the foot is covered by the aponeurosis of the flexor muscles, in the substance of which it is strongly implanted; and the aponeurosis is in its turn covered by the fleshy frog.

This part is composed of a soft and spungy substance, of the same shape as the horny frog.

The vessels which are distributed in the internal part of the foot, are the arteries, veins, nerves, and lymphatic vessels; to which we may add, the secreting and excreting vessels, distributed round the articulation.

The artery of the leg, or shank, after dividing itself into two branches behind the pastern, penetrates on each side into the interior of the foot, and these branches are distributed through all its parts. The veins follow the same course as the arteries.

Two branches of the nerve distribute themselves equally on both sides. The lymphatic vessels are not

very perceptible. The glands lie between the articulation and cartilages.

This concise description of the several parts of the foot, is sufficient to enable a person to distinguish himself in the art of farriery, properly so called; too minute a detail, in these elementary instructions, would be productive of great perplexity. We shall now proceed to take a review of the use of the parts of which we have been speaking, beginning with the external.

The wall, the sole, and the frog, form together a horny box. The wall, from its direction and consistence, is evidently designed to support the greatest part of the weight of the body; and it is for every part of its lower circumference, that the point of rest on the ground is intended to take place.

In a state of inaction, the heels more directly support that weight in proportion to the obliquity of the line, from the fetlock to the ground.

In

In *progression*, on the contrary, or while the animal is advancing, the toe more particularly receives the weight at the moment of *percussion*, or when the animal presses on the ground, in order to advance its body.

The weight, however, bears in more instances upon the heels than on any other point of the circumference of the wall.

The frog, from its situation, bears only a slight part of the general burthen; but its chief use is, to serve as a cushion, or guard, to the tendon of the flexor muscle of the foot, to which it acts as a sort of fulcrum.

The soft, spungy, and elastic substance of the frog, perfectly fulfils the views of nature, in preserving the tendon in question from the impression of hard and compact bodies, communicating to it every effect of reaction.

The

The sole in its natural state, and enjoying all its strength, may without risk receive a slight share of the weight, particularly in that part which adjoins the wall; but its concave form proves, that it was the intention of nature to keep it as distant from the ground as possible, in order to preserve it from too great a pressure, which would infallibly prove hurtful to the fleshy sole; and the more so, as this last lies between it, and the bone of the foot; that is to say, between two bodies exceedingly hard.

The heels, I have already said, form the two chief points of rest of the foot.

The binders, are a continuation of the fibres of the heels, as has been shewn above; their principal use is, to distend the heels, which, without their opposition, would infallibly contract.

The internal parts of the foot accomplish also particular functions, which are equally reciprocal.

The

The bone of the foot, constitutes the most solid part of the work. It is the basis of the interior mechanism; and receives the whole burthen, which it afterwards distributes to the surrounding parts.

The laminated substance establishes a close connection between the bone of the foot, and the wall; and contributes also to the distribution of the vessels which convey to the whole circumference of the hoof, the nutritious juice necessary for its growth.

The fleshy frog stands in the same relation to the horny frog, which it likewise replaces in its turn.

The arteries convey life to the parts, by means of the blood which they conduct; and the veins take charge of the residue of that blood, which they bring back into the current of circulation.

The nerves distribute sensation.

The

The glands secrete a humour, designed to lubricate the articulated parts, and to prevent by that means, the drying and inflammation, which would otherwise be unavoidably occasioned, by the action and friction to which those parts are exposed.

LECTURE

LECTURE II.

Of the Position of the Foot on the Ground, and of the concave Form of the lower Surface of the Foot, considered in respect to Shoeing.

HAVING in the preceding lecture described in a concise manner, though sufficiently full for our purpose, the form and organization of the foot, it is our next business to endeavour, by some fixed rule, founded in nature, to determine, what is the best position of the foot upon the ground; which will enable us to form a just idea of the several defects which tend to impair the firmness of the bases of the frame. In order to explain the principles we are about to offer, it is not sufficient to consider the foot alone, we must extend our en-

quiry and ascend to the very origin of the limb; because it frequently happens, that the faulty position of the foot is the natural consequence of the bad conformation of some other part of the leg.

If we suppose a leg well formed, and the foot on which it is supported duly proportioned, and consider them in a state of inaction, or standing; we shall perceive,

1st. That a perpendicular line, falling from the point of the shoulder to the ground, will touch the hoof exactly at the toe; if the foot were before or behind this line, its position would be evidently faulty.* In many instances, however, as the foot is thrown into one or other of these positions, by the

* The reason of this will appear by considering, first, that the less the legs of the horse are in the first place intended as columns to support the superstructure; and secondly, that a column then only enjoys its whole strength, when it stands exactly perpendicular to the horizon. Accordingly, in the horse here described, the fore arm and shank bone will be perfectly straight, and parallel to the ideal line falling from the shoulders to the toe.

false

false direction of the leg, we are to take care, in these particular cases, not to attribute to the foot a fault which is not justly imputable to it.

2dly. A perpendicular line falling from the upper part of the knee to the ground, considered in front, will divide the foot into two equal parts in its passage through the center of the coronet to the center of the sole. If this line should fall either on the inward or outward quarter, the foot would evidently be awry. In this case the lateral parts of the foot become unequal either in height or direction, and the toes are turned either outwards or inwards.

The toe may be turned outwards, either by the bad conformation of the foot alone, or by the false direction of some part of the leg. When the fault is in the foot, it proceeds from the inward quarter being too low, in which case the weight of the body pressing more immediately upon it, overburthens it, and prevents its growth; whilst the outward quarter, relieved from bearing a part of the weight which it

ought to have shared, grows and spreads itself at the expence of the other. This fault may be lessened by shoeing, as will be explained in the next lecture. The toe may also be turned outwards by the following defects: 1st. When a horse is narrow-chested, and the elbow being pressed against the ribs, directs the extremity outwards. 2dly. When the knees are turned inwards. 3dly. When the articulation of the fetlock is bent inwards; both of which produce the same effect with the former. In these three cases we may in some degree relieve the inward quarter, but we must not attempt to restore the position of the foot entirely, as advised by a certain author, because in following his advice we should strain the ligaments of the articulations, which no doubt are originally faulty, and to which art can offer no remedy but what is attended with great danger.

The opposite causes to these here described produce the contrary defects: 1st. When the elbow is too much detached from the body, the whole leg, and

and consequently the foot, will be directed inwards. 2dly. When the knees are bent outwards (a deformity which seldom occurs): and, 3dly. when the fetlock is turned outwards. In each of these three cases the art of shoeing can at the utmost only check the progress of the evil, but can never remove it entirely.

There is a cause, not less common, which destroys the natural position of the foot on the ground; namely, when one of the quarters is more forcibly contracted than the other. This contraction is occasioned by the upper surface of the shoe being made concave, which cavity confines the quarters as in a vice;* and also by the practice of cutting away the binders of the sole, and the inner part of the heels. In this state, the quarters being com-

* This will be understood by recollecting, that, action and reaction being equal, when the hoof which is pared away to correspond with the cavity of the shoe, begins to grow within that cavity, the resistance it will there meet with will be the same as if the shoe compressed the hoof, and the effect will be equal.

pressed

pressed by the shoe, and the heels losing that resistance which nature had opposed to their contraction, draw mutually towards each other; or else, the weaker yields to the stronger, and the foot becomes awry. In these cases, the art of shoeing sometimes affords a remedy, as will be hereafter explained.

We shall not in this place examine several accidental causes which contribute to vitiate the position of the foot; such as, false quarters, operations ill performed, the destruction of the toe and heels, the too great height of the latter part, as well as the too great length of the former; these particular circumstances will not authorize us to lay down any general rule in theory, since practice only (as will be shewn in the practical lecture) can enable us to determine concerning them, and to apply the seasonable relief.

We proceed now to the examination of the inferior surface, or cavity, of the foot, considered in respect to shoeing.

We

We know that the horse, in his wild state, requires no shoes to protect his feet from the resistance of the ground on which he treads. But, being rendered subservient to the use of man in a domestic state, applied to severe and continued labour, and compelled to tread frequently, and for a long time together, on the irregular and stony surface of the roads, it became necessary to secure his feet from ruin by strengthening them with the iron band which we call, a shoe.

The question, then, is, what ought to be the shape of this shoe; and whether the shoe which is in use at present, is conformable with, or contrary to, the intention of nature.

It is clear to every observing mind, that nothing in nature is the effect of chance; an intelligent principle has evidently presided over the formation of the animated bodies which inhabit this earth, and the same principle has been no less provident in determining the functions of their several parts. In fact,

fact, into whatever part of nature we inspect, we every where discover manifest proofs of a positive design, and of aptness to a particular end. If we examine, for instance, the inferior surface of the feet of all animals, we shall perceive them to be more or less irregular, according to the purposes of their species; that is to say, according to their means of providing themselves subsistence, and of removing themselves more or less speedily from one place to another.

Without adducing instances from the great variety of animated beings with which we are surrounded, and among which the curious observer may hourly find an opportunity to verify this remark, we shall confine ourselves to the examination of the horses foot, which is the proper object of our enquiry. We have already observed, in describing the external parts of the foot, that the sole is always more or less concave; this shape answers two purposes, both of which nature evidently designed in so constructing it. The one purpose is, to make the tread

of

of the foot bear equally on all the points of its circumference; and, at the same time, to raise the sole above the ground in such a manner as to protect it from the violent pressure which would otherwise have unavoidably injured the tender parts contained within the hoof. The other purpose is, to encrease the strength and firmness of the foot upon the ground.*

To

* The irregularity we have mentioned in the lower surface of the feet of all animals, gives rise to several prominences, which enable them to attach themselves firmly to the different surfaces on which they tread, and serve as *fulcra*, or points of rest, adapted to the respective motions of the different species. This we perceive both in the claw, the cloven-foot, and the entire hoof. With respect to the horse, whose nature it is to exert occasionally great strength and great speed upon a surface either flat or moderately inclined, it was necessary he should have a foot with a certain surface, and so constructed as to command a firm footing upon the surface on which he was to tread. Accordingly, nature has given him a vaulted or concave foot, bearing with incredible force upon the lower edge, or foundation of the vault, and capable of maintaining, by means of that cavity, an almost inseparable union with the soil; as this lecture is intended to prove. The antients, to whom the use of the iron shoe was unknown, and who, from not having their ideas perplexed by the different theories of shoeing, valued highly the natural hoof for its obvious utility; directed their attention to the preservation of its natural form, no less than of its consistence. The acute edge, which they cauti-

To convince ourselves that the cavity of the sole contributes to produce this effect, let us observe a horse treading upon a moderately soft surface, and we shall perceive that at every step the foot leaves in the ground an impression produced by the *ungula* (or sharp edge of the wall) and by the frog; while the sole moulds in bass-relief; so that the lower surface unites itself with the ground, forming a species of articulation, and from this circumstance results a most firm point of bearing, rendering it impossible for the foot to slip or be displaced, while the leg is employed in forwarding the body.

ously retained, was called by the Greeks ονυξ, by the Romans ungula. In the Geoponica the learned editor thus observes of this part. "Ὀνυξ cum ab τῃ ὁπλῃ distinguatur, ungulæ debet pars esse anterior inferiorque, cujus firmitas ab antiquis, ferreas soleas ignorantibus, in præcipura ponitur laude." vol. 4. p. 1104. The same distinction, and from the same cause, seems to have been made by the Roman writers on this subject, between the *unguis* and the *ungula*. Vegetius recommends, in his first book, to anoint the *ungulæ* after a journey, that by this means, "subcrescat quod itineris attriverat injuria." In the same place he gives directions for cleansing the sole and frog, "soleas ranulasque purgari, quod fortiores *ungulas* reddit." And a few lines lower he particularly mentions the *ungula* as that part which imprints the ground. Whereas the *unguis* is considered as the upper surface of the hoof; "coronas vel *ungues* animalium confricabis."

When

When the horse is on very hard ground, the hollow of the foot, it is true, cannot produce an equal effect, but the sharp edge of the wall, and particularly of the toe, will nevertheless fix the foot much more firmly to the ground than if the interior surface was a perfect plane.

These reasons which we have produced here to prove, what were the intentions of nature in thus rendering the lower surface of the horse's foot concave, are so simple and obvious, that it appears unnecessary to adduce examples for their support; in order, however, that we may omit nothing which may tend to convince those who differ from us upon this subject, and who are strongly biassed in favour of their own opinion, we shall offer what appears to us an incontrovertible principle; and should we have the good fortune to succeed in this attempt, we may flatter ourselves with having gained no trivial victory.

The leg of a horse when in action, describes a portion of a circle, proportioned to the length and

freedom of its motions. When the horse advances one of his legs, at the moment the foot touches the ground it describes an oblique line, inclining forward from the shoulder to the ground. In proportion as the body advances, this obliquity is lessened, until at length the leg attains a vertical direction, at which time the horse has completed half his action. All this time the leg has only been employed in bearing the weight of the body; but in continuing the action it begins to project or determine the body forward, which action it continues until it describes another oblique line, equal to the former, but in an opposite direction, inclining forward from the ground to the shoulder, and forming with the first line an angle more or less open; this is the whole extent of the action of the horse, and the foot, firmly fixed on the ground, does not quit its tread till the whole action is completed. This, however, can only be applied to a well formed foot, enjoying every advantage which may result from its structure. Let us now suppose a flat foot, that is to say a foot, the cavity of which is from some cause filled up, or effaced.

The

The points of rest on the ground at the moment of progression in such a foot will be far less firm than that of the concave foot, because when the leg, in projecting the body, shall have obtained but a certain degree of obliquity, it will not dare to hazard the whole extent of its action, lest the foot, which has not sufficient hold upon the ground, should slip back. If we carry our thoughts now to the convex foot, it will be easy to conceive that the convex surface of the sole destroys entirely the solid bearing of the foot on the ground; such a foot is constantly in a state of vacillation, and would unavoidably slip back, before the leg could possibly attain its last degree of extension.*

I beg

* This may be reduced to demonstration by comparing the feet of all quadrupeds, which, however they may be diversified or adapted to other particular purposes, agree in one general principle, by which they effect their progression. They are all furnished with a heel, serving as a point of rest while standing, and the opposite side of the foot, or toe, is provided with a sharp angular point, or points, by affixing which to the ground they are able to command any degree of speed. Even man, when running, at each projection of his body inflects his toes to the ground, and by the firmness of that pressure obtains

I beg to observe, that I have employed the extreme points of comparison, in order to render my reasoning the more perspicuous; in further illustration of

tains the last degree of purchase; as may be proved by attempting to run, at the same time keeping the toes from the ground. The cat kind, by means of the excessive sharpness of their claws, which they are able to fix into most substances, so as to ascend a tree and other perpendicular surfaces, are able to secure their footing with proportionate firmness. The dog, whose feet are partly of the same nature, but who is not intended for the same mode of life, is provided with claws less curved and sharp, but which enable him, upon surfaces more inclined, to tread with extreme firmness and tenacity, and by their pressure in the surface of the earth furnish him with a purchase, which enables him to display a surprising speed. The deer, also intended for speed, finds the same benefit in the double angle of his toe, which strikes into the ground, and establishes a most firm tread. The same is to be observed of the horse and zebra, in their natural state; which animals, although they have not an angle visible without, like the others, and though the foot is guarded by a circular defence, yet tread with equal firmness by means of an angular edge. Let us compare in detail the feet of the horse and the dog; and it will appear that they are formed exactly upon the same principles as to progression. The ball of the foot in the dog, corresponds with the heel and frog of the horse, and the five points of the claws, standing in a semi-circle, correspond with the lower edge of the hoof, which may be considered as a succession of points. The former rests on the ball of the foot, as the latter on the heels and frog. In proportion as the body is advanced and the foot retires, the point of rest advances to the toe, in the horse, and to the central claw in the dog.

of these principles, let us consider how much strength is lost by large draft horses, when drawing a heavy carriage up an inclined road. Their feet, which are either flat or convex, slide back at every step before the leg has been able to complete the whole compass of its action. To render this more evident, let us make an arbitrary calculation, and suppose the extent of the possible action of the leg to comprehend 25 degrees;* this it will accomplish, provided the foot can be solidly and firmly fixed on the ground. But if the firmness of the foot is in any degree impaired by its flatness, it will be obliged to quit the ground at the 22d degree,† and suppose one degree lost by the slipping of the foot backwards, this will

dog. When either animal is stretched to the extent of his limb, the points of the toe and claw are pressed into the ground, and from the purchase there obtained the body is projected. If we were to widen the point of the claw in the dog, by adding to it a small plate of iron, broader than its natural termination, there can be no doubt that the dog would be unable to tread with the same hold, or to extend his limbs to the term of their natural action.

* See pl. 1. fig. F. G.

† See pl. 1. fig. H. I.

make

make a difference of 4 degrees. But if the inferior surface of the foot is convex, it will quit the ground at the 20th degree;* and if two degrees are added for the slipping backwards, it will make the loss of 7 degrees in the total action of the leg.

With the evidence of the experimental proof before us, let us proceed to lay down a sure and certain principle for farriery, and such as shall enable us to determine the proper shape which the shoe ought to have, when we first apply it to a foot that has never yet been shod.

No one will venture to deny, that whether we consider the inward anatomical construction of the foot, or its outward form; or consider the use of its several component parts, reason directs us to a close imitation of nature. If we apply to the foot of a horse a concave, a flat, or a convex shoe, it is evident that the consequence will be precisely the same as has been shewn to result from feet whose inferior sur-

* See pl. 1. fig. K. L.

face

face are naturally concave, flat, or convex. Suppose, for instance, a foot well formed and properly concave, a second, flat; and a third, convex. The inconveniences attending the convex and flat foot, will be considerably increased by shoes with a similar surface, because the iron of the shoe being harder than the horn of the hoof, presents a smoother and more polished surface, and, consequently, more liable to slip. On this account therefore it is, that we have proposed the concave shoe, that is to say, concave in its lower surface, because it represents the natural shape of the foot, and because it fulfils, in every respect, the views and intentions of nature; and we are therefore convinced that it ought to be applied to all good feet.

As some cases are to be excepted from every general rule, so here the use of the concave shoe is to be excepted from the case of a flat foot, and especially of a convex one; but it does not follow from this exception, that the use of this shoe may not become general in time; because it must be remem-

bered, that feet only become flat and convex through bad shoeing, or by some accident, as when a horse is foundered; and that no horses, not even those bred in marshy and low lands, are foaled with this imperfection. Nor can we be justified in accusing nature with having neglected to provide sufficiently for the foundations of this admirable machine, when at the same time the same machine affords us so many convincing proofs, both of her wisdom, and her providence.

But it is not in the concave form only that the shoe here proposed must differ from the shoe in use among farriers, at this day; there are certain proportions also to be observed in its different parts. Its breadth should be considerably less than the breadth of the common shoe; it is totally unnecessary to cover any part of the sole, especially when care is taken to preserve its natural hardness. The breadth of the shoe at the heels, should be one half of its breadth at the toe. Its thickness should decrease gradually from the toe, so as to be reduced

one

one half at the extremity of the heels. As to the distribution of the stamp-holes, every farrier knows that in shoes for the fore feet they should be at the toe, and quarters, because the wall, or crust, of the fore feet is stronger at the toe than at the heels. The reverse of this is to be observed, in the hind shoes, because the heels, and quarters of the hind feet, are commonly stronger than the toe. It is impossible to lay down any general rule for disposing of these holes in bad feet, it must be the business of the farrier to distribute them in such a manner, as to be able to fix the nails in those parts of the wall where the horn is sound and firm. Farriers generally multiply these stamp-holes too much, which brings the nails too close together, occasions the horn to break in splinters, and at length destroys the wall.

I would recommend the following number for good feet, viz. for race-horses, six; i.e. three on each side: for saddle horses, seven; four on the outside and three within, the quarter on this side being

weaker than on the other; the same number for coach horses of the middling size; for large coach horses, four on each side; and for cart horses, five on the out, and four on the inside.

It is also of principal importance to determine the weight of the shoe; for it is matter of astonishment to see some horses with shoes weighing each five pounds, making together a burthen of twenty pounds of iron attached to their four feet. It is obvious to common sense, that such an additional weight fixed to the extremity of the leg, must be productive of some inconvenience or other, and in fact the muscles are thereby compelled to greater exertion, the ligaments are stretched, and the articulations continually fatigued; and besides all these evil consequences, the shoe by its weight forces out the nails, and so entirely spoils the texture of the wall, or crust, that it becomes often extremely difficult to fix the shoe to the hoof. Why then, we may ask, do not the practitioners of the present day, who are daily witnesses of these facts, and are indeed the principal authors of them,

them, apply themselves to the correction of their own errors? The answer, I fear, is obvious, because he who is uneducated, and destitute of sound principles in his art, cannot turn to real profit the experience he has acquired, nor abandon the path of prejudice and custom in which he has so long journied; but satisfies himself, with continuing to imitate and repeat whatever he has seen done by others.

The weight which we propose for shoes of different kinds is nearly as follows;

	lb.	oz.
1. For the strongest sort of cart horses,	2	12
2. For the smaller horses of this kind,	1	12
3. For the largest coach horses, - -	1	12
4. For the smaller, ditto, - - - -	1	4
5. For saddle horses of any height	1 lb. 2 oz. to	10
6. For race horses, - - - -	5 oz. to	4

By reducing the superfluous breadth of these shoes, their thickness may be increased without making any addition to their weight.*

* It will follow that great attention should be paid to the quality of the iron; since the goodness of the metal will allow one to reduce still

Besides the common shoe for sound feet, there are also others whose various shapes are determined by the necessity of the case, that is to say, by the different derangements and diseases to which the horse's foot is liable. Such, for instance, are, what are called the covered, flat, or convex shoe, the patten shoe, the shoe for all feet, simple, double, and hinged, the shoe without nails, the half moon shoe, the Turkish shoe, the slipper shoe, &c.

The mule being an animal uncommon in this country, the ass of no great value, and the ox not generally employed in labour, we shall dwell but little on the shoeing of these animals. The shoe for the fore feet of the mule is very similar to that which the farriers call, the bar shoe; it is very wide and large, especially at the toe, where it sometimes pro-

still more the size and weight of the shoe. Many persons will no doubt observe, that such light and concave shoes will wear out too soon: I have no objection to agree with them in that respect; but I will ask them, if they would prefer to have their horses lame six months of the year, rather than pay the expence of eighteen or twenty shoes more in the space of twelve months.

jects

jects four inches and upwards beyond the hoof. This excess is given it with a view to enlarge the basis of the foot, which is in general exceedingly narrow in this animal. The shoe for the hind feet is open at the heels, like the horse's shoe, but it is lengthened at the toe, like the preceding one. The former is called in French, *planche*, and the latter *florentine*.

The ass's foot having the same shape as the mule's, requires the same kind of shoe, with this only difference, that the shoe for the fore feet is not closed at the heels, and that its edges do not project so much beyond the hoof. It is the same for the hind feet.

The ox's shoe consists of a flat plate of iron, with five or six stamp-holes on the outward edge to receive the nails; at the toe is a projection of four or five inches, which, passing in the cleft of the foot, is bent over the hoof, so as to keep the shoe in its place. In many parts of France, where the ox is used

used for draft, it is sometimes necessary to employ eight shoes, one under each nail; or four, one under each external nail; and sometimes only two, one under the external nail of each fore foot.

I have given this short account, in this place, because it is not my intention to say any thing more in these lectures concerning the shoeing of these animals. In the next, I shall call your attention to the danger of paring the hoof too much, and to the mischiefs which daily result from the exercise of this destructive method.

LECTURE

LECTURE III.

Of Paring the Hoof, the Accidents resulting from the unskilful Performance of this Operation; and of Shoeing good, flat, and convex Feet.

WHEN a colt is brought to a farrier to be shod for the first time, his first business should be to examine the conformation of the young animal, particularly the direction of his legs; to observe whether the fore legs are perfectly vertical, or whether, on the contrary, they incline backward or forward; whether the pastern is in just proportion, A,* or whether too long, B,† or too short, C,‡ whether the toes are turned inwards, D. D.§ or outwards, E. E‖; he should endeavour, by the principles

* See plate the first, fig. A.
† Ditto ditto fig. B.
‡ Ditto ditto fig. C.
§ Ditto ditto fig. D. D.
‖ Ditto ditto fig. E. E.

we have laid down in the preceding lecture to discover, in which part of the limb the fault exists.

He is then to proceed to examine the foot, and to ascertain, whether it is proportionate to the leg; whether its surface is free from defect, whether of a good consistence, i.e. whether strong or weak, hard or soft, whether the quarters are equal, the heels high or low, slender or thick; whether the frog is in just proportion to the other parts; whether the sole is strong, or the contrary; and to observe its degree of concavity.

If the leg and foot are exempt from every defect, the farrier should begin paring the foot, by merely cutting off, whatever breaks the level of the inferior surface of the wall: but he is not to meddle with the sole, the binder, or the frog. This seems the proper place to convince him of the necessity of preserving to these parts their solidity, by laying before him the numberless accidents, attending their destruction: Let us ask ourselves, what is the drift

of

of the operation of farriery? It is to furnish an additional strength for the foot, to render it capable of resisting the hardest bodies, to which it may be exposed: but, if at the very time we make this addition, we destroy with the butress those parts, which nature has formed with the very same intent, we not only do not increase the resources of the foot, but we destroy that organ, by predisposing it to a multitude of ailments, of which I shall speak hereafter.

By thinning the sole too much, and going beyond the dead horny part, we destroy its organization: for it is not necessary to go so far as to feteh blood, to produce this evil; it is enough only to touch that substance, which receives the glutinous juice through the numberless pores with which the sole abounds. The result is a real wound, which cannot be understood, but by a person acquainted with the laws of the animal œconomy, and of which the mere mechanical practitioner cannot form an idea. "Let us, however, make a comparison, capable of striking the most undiscerning. If, for instance, we take away

the upper surface of the bark of a tree, we do it no great injury; nevertheless we rob it of its natural covering; and if we penetrate further into the substance of this bark, we shall produce a real wound; we shall perceive a kind of moisture exuding from the part, which will soon be absorbed by the contact of the air, and drying up the surface of the bark, already too much affected, will produce a scar, more or less irregular, and which will not be effaced, till nature has renewed the bark, an operation, which will require a certain lapse of time.

What should we say of a gardener, who, in order to protect a tree from the fruition of other bodies, to which it might be exposed, should begin to strip it of its bark, with the design of inclosing the body with some artificial covering? we should no doubt look upon him as the most stupid of mortals, yet such a man is the farrier, who destroys the whole external surface of the foot in order to fix on his shoe.

The

The inconveniences that arise from overparing the sole, are not the same in all feet: among those that are hard, narrow, and very concave, as among blood or high bred horses, the drying up of the sole increases the cavity to that degree, that it compresses the fleshy sole, which occasions a constant and a very painful lameness, and which the farrier, who is far from suspecting the true cause, increases every time of shoeing.

When the foot is naturally large and disposed to relaxation, the sole being too much thinned, yields to the afflux of the humours, loses its concavity, becomes flat and even sometimes convex; this accident is very frequent. The sole also, when too much thinned, is liable to be easily bruised by the shoe, stones, or gravel, &c.

It is therefore of the greatest importance to preserve to the sole its natural thickness, and consequently the farrier should only take off with the butress those lamina or scales, which are really dead, and

and almost detach themselves, especially when they remain too long on old shoes.

I repeat what I have already said, that the frog is intended to bear part of the weight of the body, and that for this reason alone, it ought to be preserved entire. When it appears too bulky as in fat or flat feet, which have generally very low heels, it is better to supply this defect by a slight encrease of thickness in the heels of the shoe, than to strip this part of its horny covering. By this means the heels are raised to a level with the rest of the foot, and the weight is equally distributed to every point of the circumference of the foot.

By cutting the frog to the quick, as is often practised, the part is irritated and inflamed; the humours become abundant, and produce a sharp discharge, which corrodes its own substance, and even that of the heels; and which sometimes in its progress rises to the folds of the pastern, and occasions the disease, which we call the running thrush, a very common affection,

affection, though none would be more rare, if the frog was never pared. Nothing more should be cut away, than those dead and proud parts, which naturally detach themselves by the laws of growth and reproduction.

The heels should be pared according to their strength, height, or depression; and also in proportion to the length or shortness of the pastern, which it is very material to observe; if we remember, that these parts support three quarters of the weight of the whole mass, the necessity of preserving them will be obvious.

The binders, those parts so very essential to the support of the heels, should be preserved with the most scrupulous care: the butress should never touch them, excepting in some very extraordinary cases, when they grow too fast, it then becomes indispensable to cut them level with the heels, but always flat, and never obliquely nor inwards.

To

To judge how very remote the farriery of the present day is from a sound practice, we have only to examine the feet of horses in general. We shall hardly find any one, whose binders are not destroyed; nay, more than that, the farrier, by one stroke of the butress, makes a division between those parts and the heels, at the place where the point of bearing lies; and not satisfied with that, he further separates, with the same tool, the frog from the heel. These two last ruinous operations are the finishing strokes. A farrier, who should be aukward at these, would not be reputed a good workman.

In short, ignorant practitioners, who only see by the eyes of the body, the perception of which is limited to the superficies, operate on a horse's foot, as a carpenter on a piece of wood to polish it.

But how shall we be able to persuade men, unpossessed of the first principles of their art, that their method has hitherto been in direct opposition to the laws of nature? How make them to comprehend, that

that instead of opening the heels, they facilitate their contraction? Indeed we shall not attempt it, persuaded we should have to encounter no less obstacles from prejudice, than those which superstition opposed to the demonstrations of Galileo.

It will therefore only be, when veterinary science shall have made a certain progress, and that students enlightened and settled in different parts of the country, have disseminated its principles, that hopes may be entertained of a salutary reform in farriery. But let us here terminate these reflexions, and return to the practice of farriery.

We have already said, that our method of paring a good foot that has never been shod, consisted merely in rendering the wall level, in order to receive an equally level shoe, but that the butress should not be used on any of the other parts.

If it is a good foot that has been shod several times, we are still to take off from the wall nothing

more than the old horn, which is not sufficiently solid to receive the shoe; and only cleanse the sole and frog from the proud parts, which are ready to come off spontaneously.

When the foot is thus prepared, the concave shoe, No. 1,* is to be applied. Here the old observation naturally recurs, viz. that the shoe should be adapted to the foot, and not the foot to the shoe.

The farrier therefore must pay the greatest attention to make the shoe exactly correspond with the circumference or outline of the foot. This fundamental principle of farriery is generally neglected; of which we may be convinced by casting our eye on figure M, plate 2. which represents the natural form of a colt's foot, compared with figure N, representing a foot ruined by bad shoeing.

Two other causes combine with this in straightening the quarters and contracting the heels, viz.

* See the brass shoe, No. 1.

destroying

destroying the binders and the concave form, given to the upper surface of the shoe, being the very reverse of that which is here given.

The shoe being adjusted to the foot, without pressing the sole, should admit between it and that part just a sufficient interval for the introduction of the pricker, a greater space is liable to admit large gravel or stones, which may bruise the sole, and even occasion sores.

The shoe being nailed on, the farrier should have as little as possible to rasp, and that only from the shoe to the rivets, but never above them, because by rasping the whole surface of the hoof, you not only injure its substance, but you dispose it also to dry. And should the rasp, through the unskilfulness of the farrier's hand, touch ever so slightly the origin of the nail near the coronet, where the part is exceedingly thin, sand-cracks are very apt to ensue, the beginning of which is a small wound or crevice, occasioned by the stroke of the rasp. Hitherto we

have been speaking of the shoeing of the fore feet; we shall now enter into some detail respecting the hind feet.

It is no less necessary to examine the direction of the hind legs, and the position of the hind feet, in order to proceed with judgement, in the operation of shoeing. In consequence, the farrier should place himself behind the horse, and trace with his eye, a perpendicular line, which proceeding from the point of the hock, should fall on the sole, passing through the center of the heel. He is to observe, if this perpendicular line falls within the foot, whether the points of the hocks incline to each other; if, on the contrary, it fall on the outward side of the foot, whether both hocks do not incline outwards. In the first case, by viewing the horse in front, he will perceive that the toes of the hind feet are turned outwards; and in the second case, that, on the contrary, these parts are turned inwards. He should then examine the legs sideways, to ascertain whether the hock is too much bent, too straight, or too open.

The

The next step is the examining of the foot, in which is to be considered whether it is proportioned to the leg, whether its shape is natural, its consistence good, and if it is free from cracks. Supposing the leg in a proper direction, and the foot free from natural and accidental defects, he should begin to pare this part also, by taking off from the wall, those pieces of horn only, which breaks the level of the surface, to which the shoe is to be fitted; to clear the sole and frog from all the proud parts, and then make use of the concave shoe. No. 2.*

A flat foot must be pared with great caution; the butress must only touch the wall, in order to divest it of the old horn as much as possible. We must not cut away any thing from the sole or frog, these parts requiring all their strength to resist the humours, which flow to them in too great abundance, whilst the wall, deprived of its nourishment, exhibits itself dried up, irregular and scaly. In this case we are to use the shoe, No. 3.†

* See the brass shoe, No. 2. † See the brass shoe, No. 3.

The

The convex foot I have already said, in describing the hoof, is that, whose sole extends below the quarters, presenting a surface more or less convex. This deformity is so much the more dangerous, as the horse is obliged to bear on the ground at the centre of the sole, which would soon render him incapable of service, if not remedied in the shoeing.

A foot may, by a particular habit, be disposed to become flat, the sole may be weak, in a word, the whole texture of the horn may be inclined to relaxation; but nature, we are sure, never deviated so far from her own wise laws, as to intend to give the foot the shape we are speaking of. This shape is always accidental, and the result of the bad methods of paring the foot to excess, and of giving a concave shape to the upper surface of the shoe.

This last cause, by compressing the quarters, forces down the weakened sole, so as to make it lose its natural shape, and to require a greater or less degree of convexity.

It

It is not in this case only, that this bad shape of the shoe produces dangerous consequences, the strongest feet are impaired by it; it crushes the quarters, and contracts the heels, from whence a compression of the quick parts ensues, and consequently lameness in a great number of horses. There is no method of remedying the convex foot, and we may think ourselves fortunate, if we are sometimes able to check its progress. The manner of paring it is the same as for the flat foot; the sole must be most cautiously pared, and use made of the shoe, No. 4.* the shape of which must be altered relatively to the state of the foot; it is evident, that there is no possibility of establishing the basis of the foot, solidly upon the ground, on account of the convexity, which we are obliged to give the shoe.

Having hitherto considered the shoeing of feet, in relation to their form, let us now proceed to the shoeing of those, which are very defective in their position.

* See the brass shoe, No. 4.

When

When the toes are turned outwards, the pressure of the foot on the ground lies chiefly on the inward quarters; the farrier's object should be to diminish this pressure, if he can, by increasing it on the outward quarters. He will most likely succeed; 1st. By preserving to the inward quarter all its height. Secondly, by lowering that of the outward quarter. Thirdly, by increasing the thickness of the inward branch of the shoe; and, Fourthly, by rendering the outward one very thin. By means of this two-fold operation, the foot will be brought back to the vertical plane, and will bear equally, and at the same time, on all parts of its circumference.

We should also take care to shoe with great exactness, and very short in the inner heel, because horses, whose feet are turned outwards, are apt to cut themselves with the extremity of the inner branch. And here we must observe, that if the defect under consideration, has its origin in the upper parts of the extremity, or in the too narrow conformation of the chest, as it sometimes happens, we must

must renounce the method we have just laid down: because, by suddenly altering the position of the foot, though a vicious one, we should expose the ligaments of the articulations, between that part and the shoulder, to hurtful extensions, of more dangerous consequence than the fault which we meant to correct: it is therefore only, when that fault proceeds from the articulation of the fetlock, that some attempt may be made by a slow and gradual process.

When the toes are turned inwardly, one must proceed by a contrary method. 1st. Cut the inward quarter. Secondly, preserve the outward one. Thirdly, increase the thickness of the branch on that side; and, Fourthly, diminish that of the inward branch, by taking off as much as possible from the wall, reckoning from the middle of the toe to the middle of the inward quarter; because it is with this part that the horse cuts himself: but before we employ this method, we must understand the nature of the fault, and for that purpose we must employ the mode of reasoning used in the former article.

We proceed now to the consideration of the narrow heel; or, as the farriers call it, hoof bound: this defect consists in the excessive contraction of the heels and quarters, and is natural to many horses of the southern parts of Europe, and also to blood horses of different countries. There is no remedy against this original defect. We must pare and shoe the foot, as if it were a good one, and apply the concave shoe, which will project rather more, than in a well formed foot. By these means, we shall stop the progress of this defect, which the farriers promote by cutting away the sole, the frog, and the binders.

This, when not an original defect, proceeds from the naturally dry disposition of the fibres or the hoof; from the destruction of the sole, the frog, and the binders; as also from the concave or hollow shape of the upper surface of the shoe; but the natural dryness of the fibres alone, however great, seldom produces lameness. It is then the butress, that butchering tool, that almost always occasions this evil we

are

are speaking of. It is very rare for a hoof-bound foot to be perfectly restored; but the defect may be diminished, or at least its progress stopped.

To this end the sole, the frog, and binders, must be preserved with the utmost care. These parts in their growth will throw out the heels a little, or at least will form an opposition to their further contraction.

The heels are to be pared flat, as well as the whole circumference of the wall; and we must use the common concave shoe, and in order to second the effects of shoeing, we must not omit bathing the feet in luke-warm water, and applying emollient poultices both under and over the foot. We must not expect a speedy cure; the space of a year is a very short term in a case of this nature, as may be judged by considering the slowness of the reproduction of the nail.

I cannot pass over in silence the slipper shoe, which many practitioners use to remedy the defect in ques-

tion, and which is at present the only resource of the professors of the veterinary schools in France. The shape of this shoe is exactly the same as that of the common shoe in the whole extent of its surface; but the outward edge is exceedingly thin, whilst the inward is altogether as thick; so that the side of the shoe towards the foot, forms a slope, of which the pretended use is, to press open the heels, and turn them outwards. But not only nature will not consent to so forced an effect, but we must also observe, that we really encrease the cause of the defect, in opening the heels, as the farriers do, in order to apply this slipper shoe.*

Let us now proceed to the shoeing of a horse, *that cuts*, as it is called. We have already said, in speaking of feet, that, turned inwards or outwards, the horse cuts himself with the toes or with the

* This particular error alone, under which farriers labour, will make it evident how necessary it is to be acquainted with the nature of the thing on which we are employed; and recals the apt remark of Vegetius, "Curare rationabiliter non potest, qui qualitatem rei quam curat ignorat."

heels.

heels. This accident happens more or less frequently, in proportion to the degree of defect in the conformation, and of weakness or weariness in the horse. In all these cases, there is but one remedy, which consists in applying a shoe perfectly exact, very short on the inner side, and without stamp-holes on that side, and paring off from the quarters as much as possible without destroying it, as frequently happens. Several farriers, unable to succeed by this simple method, give to the inward branch of the shoe several irregular forms, which, without preventing the evil, make the feet bear foul on the ground.

By just attending to the following reflections, we shall be convinced of the uselessness of the excessive thickness which some farriers give to the inward branch of the shoe; and of the cramps which others raise on some points of that branch.

It is certainly not when the foot is on the ground, that it cuts the neighbouring leg, it is only when that

that foot is up; consequently, whatever position we give the foot, by means of any shape whatever of the shoe, we shall never be able to change the action or play of the muscles, nor the direction of the articulated parts of the leg.

It is possible, by the manner of shoeing, to turn the toes a little inwards, or a little outwards, and consequently the heels also: but this effect will only last, while the foot rests upon the ground; as soon as it quits it, it must follow the direction given by the leg, and form a curve, larger or smaller, which brings it nearer to the supporting leg, and which it will strike every time that the horse happens to close his equilibrium in going; the only remedy, therefore, is to shoe to a nicety, inwardly.

We shall now endeavour to explain, concisely, the causes which occasion a horse to over-reach, i. e. to strike his hind upon his fore feet, and to indicate the best method of shoeing in that case.

The

The act of over-reaching is performed by the toes of the hind feet striking the shoes of the fore feet, either on, or between its branches, or else by striking the heels, which are thereby often dangerously cut, or bruised. It is obvious, that the hind feet could not strike the fore feet, unless these last remained too long on the ground, or unless the former rose from it too soon, this tardiness in the one, or over quickness in the other, is the effect of the particular conformation of the horse, though sometimes the fault of the rider, sometimes of the farrier.

Horses most liable to over-reach are those, which are low in front, with large shoulders, and a bulky head; and the neck either too long or too thick: In all these cases, the fore legs being overburthened, rise but with difficulty, and not sufficiently, and cover very little ground. It is useless to observe, that a horse is also subject to over-reach, when he's too high in his hind quarters, because this height is only determined by his being too low in front. A horse over-reaches also, when his fore legs stand under

der him, i. e. when they are in an oblique direction, inclining backwards, or when the hinder extremities approach too near the centre of gravity of the body, whether it proceeds from the general direction of the limb, or merely from too great a bend in the hock. A horse over-reaches, when he is too short in the body; when the spine or back bone is curved outwards. A horse may also over-reach from accidental causes, as when a rider overburthens the shoulders of his horse with his own weight; this fault is very common in England, and indeed there is no country where horses are so soon ruined before.*

The neglect of the hand in abandoning the bridle, may dispose a horse to over-reach; when the toe of the hind shoe, and the heel of the fore shoe are

* This remark is only directed to the abuse of the thing. Every good rider must be sensible, that the forward inclination which he gives his body in galloping, with the design of equalizing his weight between the fore and hind quarters, may be so abused by a bad rider, as to throw the weight on the shoulders. and thus overburthen them; and that this is really the case, appears by an attentive investigation of the subject.

too

too long, it promotes the action of over-reaching. Lastly, the natural laziness of a horse will expose him to the same inconvenience.

To remedy the action of over-reaching, we must endeavour to accelerate the rising of the fore feet, and to retard that of the hind, in which we sometimes succeed by the following means.

Begin by cutting and paring the fore heels, as much as possible, without weakening them, and then use the half moon shoe, No. 1, of which the heels are very short and thin; on the contrary, preserve all the height of the hind heels, take off as much of the toe as possible, and shoe very short in this part. The shoe No. 2, may fulfil this object. The effect, which the manner of paring may produce, deserves to be explained.

The height of the fore heels being diminished, will expose the flexor muscles to a greater extension; from whence will proceed a degree of uneasi-

ness, which will oblige the horse to lift its foot from the ground, sooner than it would have done, had the heels been higher. In the hind feet, on the contrary, not only the whole height of the heels will be preserved, but an addition made thereto; and from the thickness of the shoe, the last degree of extension of the flexor muscles will be retarded. The horse, far from being induced through pain to take his hind leg from the ground, will keep it there longer than if his heels had been lower, and from this manner of operating there will result a greater interval of time, between the motion of the fore and hind legs, which will oppose itself to the action of overreaching. A very simple comparison will probably render this principle very intelligible.

Women, who wear very high heeled shoes, walk, almost all, with their knees more or less bent, so that the extensor muscles never attain the last degree of contraction, nor the flexors the last degree of extension, which the construction of the leg would allow of.

But

But should they suddenly change the shoes they have been accustomed to for some with very low heels, they would first experience a painful stretching in the last mentioned muscles, which would oblige them to lift their feet sooner from the ground, than in the former case.

It will doubtless be observed, that as the application of the principles here establised to prevent a horse from over-reaching, produces pain, it cannot be agreeable to nature;* this I admit, and I therefore recommend acting in this case with all possible prudence in the beginning.

The late M. Bourgelat, whose theory did not always agree with his practice, had imagined different

* This however, is not so solid an objection, as may at first appear. When applied to an old horse, it is valid in all its extent; but it is otherwise in a young horse who may have shewn this disposition when breaking. At that age, the carriage of the body, and the position of the feet, may be as successfully corrected as among mankind, where education improves and almost alters the form of individuals; and though attended with some uneasiness in infancy, is presently converted into nature.

methods of shoeing, relative to the different conformation of horses; such as that of a horse too long in the body, either from the too great length of the thorax, or by the extension of the *os ileum*; or of a horse too short in the body, or of one too low, &c.

But the process employed in the different circumstances, tends to encrease the defect intended to be corrected, and would ruin the foot, and even the whole limb, before it produced the effect, which we might flatter ourselves to obtain. We shall therefore banish from our practice all operations built on chimerical foundations, and confine ourselves to such only, as experience, concurring with nature, daily confirms.

M. Bourgelat also calls in all the assistance of mechanics, in order to explain, how a foot that does not wear out the shoe evenly, ought to be shod; and he divides the under surface of the foot, by a longitudinal axis, traverse axis, diagonal, &c. I am persuaded, I shall sooner explain myself to the farrier's common

common sense, by saying to him, when a horse is brought you to be shod, examine the old shoe, and see what part is most worn out. If it is the outward branch, preserve the quarter on that side, and encrease the thickness of the shoe at that part; you will by this means remedy the fault: besides, particular cases occur every day, which it is impossible to foresee, and which require the shoe to be differently shaped. As for instance, when the quarter or heel has been destroyed, the foot wounded or pricked, the sole compressed or burnt, &c. In such cases, as it is not in our power to lay down fixed and certain rules; the operator, guided by the actual state of the foot, must give the shoe, or some of its parts, a shape adapted to the affected part, and qualified to assist its healing. As to the half-moon shoe, semi-half-moon shoe, &c. we shall mention them in treating of those cases, in which they are to be used; and we shall now briefly recapitulate the substance of this lecture, addressing ourselves to all farriers, who are able and willing to understand us.

You,

You, whose office it is to shoe the valuable creature, which is the subject of our enquiries, should abandon that blind and perverse custom, by which you destroy that essential part, the preservation of which is entrusted to your care; and submitting your understandings to the light of reason and experience, should endeavour to obtain a knowledge of those principles, on which the perfection of your art depends, and which alone can lead you to a sound and luminous practice. Lay aside, in the first place, the mechanical custom of paring the foot to excess, of thinning the sole and frog; and destroying the binders, under the false idea of opening the heels, which, on the contrary, you by that means dispose to contract; of cutting away their hind part, which is the most solid point of rest that nature has provided for the foot. Recollect, in short, that you are only to take off from this part, that portion of the old horn, which would impair the solidity of the shoe. In the next place, you are to imitate with the shoe the concave form of the foot. Let this same shoe fit exactly the circumference of the wall, without

out compelling the latter, as you are accustomed to do, to fit the shape of the shoe. Beware of making the under part of the shoe convex, excepting in the case of a convex foot. Above all, avoid turning the branches of the shoe obliquely outwards, because this distortion pinches the quarters and heels, and finally crushes them. Reduce the thickness of the heels of the shoe: be persuaded, that when they are too thick, they raise the frog too much above the ground, and that then the horse is in the same case, as you would be, if obliged to walk on tiptoe. You cannot but be sensible, how much this last fault must contribute to ruin the legs. Lastly, never rasp the surface of the hoof above the rivets.

By adopting the method here delineated, you will at least avoid the grosser errors, which are every day committed, and if you have sufficient courage to give yourselves up to the study necessary for acquiring the true principles of your art, public opinion will soon place you on a level with men who are enlightened, and therefore useful to society.

LECTURE IV.

On the Natural and Accidental Diseases of the Foot.

AS I esteem it my duty to quote those authors with whom my principles coincide, in consequence, I shall begin this lecture with the literal description which M. Lafosse gives of that well known disease called the *Bleime*, or corns, reserving to myself, nevertheless, the privilege of making some observations upon it: he expresses himself in the following manner.

" The *Bleime* is a redness in the sole of the heels, " and is of two sorts, the one natural, the other ac- " cidental, the natural sort comes without any appa- " rent cause, in feet with large heels, and is of four " kinds.

" In the first there appears a redness, produced " by extravasated blood dried up in the pores of the " horny sole.

" In the second, there, appears in the horny part " which is split, a black spot like the prick of a nail, " and, on examination, the channelled or laminated " flesh appears black and putrid.

" In the third kind, on paring the part, matter is " observed to issue from the channelled flesh in " the heels.

" In the fourth, an opening or separation is ob- " served on paring, between the wall and the soles " of the heels, caused by the matter, which is black, " and in a small quantity.

" To these four kinds may be added a fifth, in " which the wall of the heels is reversed to the " form of an oyster-shell, which. bearing inwardly, " compresses the channelled flesh of the heels.

" These

" These kinds of feet have no binder, and but very " little sole, easily yielding to the pressure of the " fingers.

" The accidental *Bleime* is caused by bad shoeing; " low heels, bearing upon the shoes, are thereby com- " pressed and bruised; they may, in like manner, " suffer from gravel lodged between the shoe and " the heels, particularly after the foot has been " pared. A bruise is the cause of this sort of *Bleime*, " to remedy which the foot must be short shoed, " and not pared, and thin at the heels, that the frog " may totally and equally bear upon the ground.

" In the second sort, where the black spot is ob- " served in the angle of the binder, and where the " foliated flesh is putrid, an opening must be made " with the butress, and pledgets steeped in spirits " of turpentine introduced, which is to be held in a " state of compression, lest the foliated flesh should " rise above it. In the third kind, where in paring " matter is observed to issue from the furrowed

" flesh of the heels, recourse must be had to other " means.

" The fifth results from a natural defect in the " formation of the foot; the heels have scarcely any " binders, the *Bleime* is barely covered by the horny " substance, the horse is very tender in that part, " because the wall is inverted, and pinches the foli- " ated flesh; this unnatural growth of the horn must " be cut with the butress. Sometimes it suppurates, " in which case, an opening must be made to give " the matter a free issue, with care not to make it " too large, lest the flesh should rise in a lump, " called in French, *cerise* or cherry; the dressing " consists in pledgets, laid one over the other, in or- " der to support the flesh, which naturally falls." It would be difficult to give a better description of the *Bleime*, or to prescribe a more proper method of treating it; but I must observe that M. Lafosse, in the design of rendering himself perspicuous, multiplies the divisions to such a degree, as to make them appear, to persons but little instructed, so many distinct disorders.

I do not entirely agree with M. Lafosse, on the cause of the *Bleime*, nor do I believe it so frequently proceeds from nature as he does; we sometimes meet with it indeed in feet whose heels are too hard, but not so often as could be supposed, after the description which he gives of it; besides, Arabian, Barbary, Turkish, Spanish, and Navarine horses, in general all horses of southern countries, are more subject to this sort of *Bleime* than the northern, because their feet are naturally harder, and of a drier nature than the latter.

Low heels, with scarcely any binders, are, says he, subject to the natural Bleime. I am, on the contrary, of opinion, that although this vicious conformation is the predisposing cause, that the *Bleime* is always determined by some immediate cause, either by the pressure of the shoe, or by gravel or stones lodged between the branches and the sole, in proof of which I am thoroughly convinced, that it is possible, by the mode of shoeing alone, to prevent this disease in feet, whose heels are low and feeble. To avoid

avoid perplexing the minds of those who wish to study the diseases of the feet, I shall omit all superfluous divisions, in stating, that a simple corn is at first observed by a redness in the part of the sole, situated between the heels and the binders, and that its progress is in proportion to the cause which gave rise to it. In consequence, a black spot is sometimes observed, which announces that the quick or living parts are more or less affected, and in paring the foot, a black sanies or gore is often noticed, which has destroyed the fleshy sole in this place, and even the foliated substance, so as to have excavated the wall, from whence results the inversion of the quarter. I have found, by experience, that M. Lafosse's method is the best to be followed in treating this disease.

I shall here assume the liberty of making a few observations on the general mode of farriers in operating for this disease. The chief care to be taken in paring the foot, is to preserve, as much as possible, the heels, the quarters, and the binders. On the

the contrary, these begin by cutting away all the parts, without reflecting on the length of time which nature requires in order to re-produce them. The operator is then obliged to erect a purchase in the room of that he had destroyed, for which reason he lays on the bar-shoe, upon which the frog is obliged to perform the office of the heels. This shoe is almost always ill shaped, and too heavy, and ruins the foot instead of easing it; whereas, if the farrier skilfully preserved the parts which he ignorantly destroys, he would avoid the use of this shoe, and employ the half moon shoe, No. 6,* which by leaving the frog and heels free, would facilitate the growth of the latter.

But we cannot expect to establish one method, by criticising another; let us therefore look back, and see whether we have not exposed ourselves to some censure. Some people, I foresee, may object to the half moon shoe, as impracticable in a country where the roads are covered with flinty sharp gravel, which

* See the brass shoe, No. 6.

would

would inevitably destroy the naked heels. This objection would be reasonable, without doubt, if the horse was put to work immediately after the operation; but every man of sense, who will keep his horse at rest until his heels shall have acquired a little consistence and strength, will soon clearly see, in this circumstance, the advantage of the method I propose.

Let us now examine that disease, called seime or sand crack, which means a cleft more or less visible, when the animal rests his foot on the ground.

The best method of preventing sand cracks in dry feet, is to keep the fibres which compose the hoof pliant, particularly near the coronet; this can be effected by the use of emollient baths, made with a decoction of mallows, or with simple water, and by the application of poultices of the same quality, composed of mallows, marsh-mallows, pellitory of the wall, &c.

In

In this particular instance, the use of greasy, oily ointments is to be rejected. Farriers, and particularly grooms, use them frequently with the intention of rendering the foot more pliant, and to blacken the hoof, and only exercising a comparative instinct, attribute to these oily substances, the faculty of softening, nourishing, and relaxing the horny substance of the hoof, for no other reason, than because they see them produce the effect upon the leather harnesses of their horses. If it were possible to persuade them that oily and fat substances applied to organized parts, obstruct the pores, and oppose the passage of insensible perspiration, and excite inflammation and suppuration, they might be induced to abandon their old practice, but the undertaking would prove difficult, and more than doubtful. I should think the most probable method to succeed in convincing them of so pernicious a practice, would be, by forbiding absolutely the use of any sort of oily, greasy ointment, and refusing to pay for these expensive articles, by visiting the stables from time to time, with a view of examining the horses feet, and

finally by discharging any groom who should infringe these orders.

But the abject state veterinary medicine is in, together, with that blind and unlimited confidence which masters place in servants, will yet for a long time resist this salutary reformation, till we learn to distinguish between science and ignorance, between the man of acquired knowledge, and elaboratory study, and the illiterate stable boy. I cannot forbear inserting here, an advertisement which appeared in one of the public papers, and which evidently proves the actual state of the science. " Wanted, a man and a boy, a father and son would be preferable, the man must be perfectly well acquainted with the nature and care of horses, in breaking, nicking, and physicking, he must be able and willing to do all kind of out door work."

If it can be imagined that a servant may possess the knowledge of Hippocrates, it would be wrong to place any confidence in physicians, whose advice is attended

attended with great expence; would it not be better to advertise for a servant properly qualified to dress hair, shave, bleed, prescribe a purge, and even to cut a leg or an arm off, if his master should have occasion? The latter has an equal right to skill in physic, as the former to the veterinary art, and ought, in consequence, to be invested with the same privileges. A similar parallel may be drawn between the shoemaker and the farrier.

I proceed now to the consideration of a very stubborn disease, in the treatment of which, farriers are generally baffled; it is called in French, *fic* or *crapaud*, and it is known in English by the appellation of canker.

This disease more frequently affects the hind than the fore feet, the causes which give rise to it, may be divided into internal and external; the external cause displays itself by the excessive height and thickness of the heels, in feet whose frog, though naturally but of little bulk, is yet compressed on

both sides. The continuance of the acrid and irritating mud in the inward part of the foot, the continual soaking of the feet in urine and dung; all these causes are assisted by the butress, which by destroying the covering of the frog, exposes it to the action of the acrid particles to which it is exposed.

The inward causes are all such things as vitiate the humours, direct them to the legs, and give rise to the obstinate disorder, which we call the running thrush. These humours often acquiring a great degree of acrimony, and even becoming corrosive, fall upon the frog and there produce the canker. The danger attending it, is greater or less, according to the parts affected; when the frog, and the flesh only are affected, and the disease not deeply rooted, the cure will be effected with no great difficulty, but sometimes it makes such ravages, as to invade the aponeurosis of the flexor muscle of the foot, and even the bone itself, where it sometimes takes root, and extends its progress between the quarters, it then separates them, by destroying the fleshy sole near

near the heels, as well as the foliated or laminated substance, and even the posterior part of the cartilage is not always secured from its attack.

That we may not confound the canker in its origin with other excrescences, which may rise in the frog, or near the heels, we must examine its substance, which for the most part is filementous or thread like, soft, presenting numberless small excrescences, resembling little mushrooms, but very slender. Its existence once ascertained, we should not confine ourselves to the common methods used by farriers, which consist in the application of caustics, with the intention of burning them off, these insufficient means consume only the surface, but leave the root which will constantly re-produce the disease. To obtain a perfect cure, it will first be necessary to examine whether the horse is troubled with the running thrush, whether the cracks exist only in the folds of the pastern; and whether an acrid humour issues from the part. In all these circumstances, we should first endeavour to remove the disorder, which

which is the primitive cause of the fic, and not attempt to cure the disease itself, before we have freed the leg from every kind of discharge; we are then not to be satisfied with a superficial treatment; we must therefore begin, by putting the horse on low diet for two or three days, to prevent a fever, which is often attended with danger; he must be blooded, and a few emollient glysters injected, made with a decoction of mallows, and every day he must swallow three or four quarts of a cooling mash, composed of a decoction of the root of marsh-mallows, with three or four drachms of nitre dissolved in each mash.

The horse being thus prepared, the operation of unsoling is to be performed, by which means we may the more easily discover the part affected. The instrument employed in this operation, is called the sage leaf, with which the canker must be eradicated, by making a deep incision to its very roots, whether it affects the fleshy substance of the frog, the aponeurosis of the flexor muscle, the laminated

or

or foliated flesh, the cartilages, or even if it penetrates to the bone of the foot; but as the cartilaginous, aponeurotic, and bony parts will admit of no cure, without exfoliation, the application of an actual cautery to the extremities of the parts that may have been effected, either by the disorder or the instrument, will be found requisite.

After the operation, pledgets, moistened with tincture of myrrh and aloes, or the traumatic balsam, may be laid over the cauterised parts, the rest of the surface of the wound is to be dressed with a pledget dipped in the æthereal spirit of turpentine, and the apparatus so managed, as to make an equal compression on all the parts.

If the operation should have been long and painful, the horse must be blooded again, plenty of blanched water given him to drink, and but little solid food. Three or four days after the operation, the wound is to be dressed for the first time; two days after, the dressing is to be renewed, and examination

nation made, whether suppuration has taken place, of what quality it is. If a kind of red serum appears, it is a proof that the root of the fic was not totally destroyed, and recourse must be had immediately to a second operation, which must be carried deeper than at first, that no vestiges of the affected part may remain. If in dressing the wound, the flesh appears to rise, and to become soft and proud, apply a digestive, made with the yolk of egg, turpentine, oil of hypericum, and a sufficient quantity of powdered vitriol, to check the over rapid growth of the flesh.

It would be useless here to observe, that a perfect exfoliation of the aponeurotic, cartilaginous, and bony parts must take place; without this, the scar would prove deceitful, and the canker would in time spring up again. In the mean time, we are to be apprehensive of a symptomatic fever, which is always to be feared, during the cure of this disease.

The

The next evil, which demands our utmost attention, is one of the most rebellious, incident to the foot, and which requires the most anatomical knowledge in the operation necessary for its cure. This in French is called *javart*, in English the horny quitter; it may be produced by different causes, such as a blow or violent contusion in the coronet, which produces an inflammation, suppuration, or a caries of the cartilage; a deep crack neglected or ill treated, which, penetrating to the cartilage, affects it grievously; a corn, the matter of which finding no passage through the sole, forces its way up between the quarter and the foot bone, by destroying the foliated substance, invades the cartilage, and opens itself a passage in the coronet: an acrimonious humour detained in the part, may give rise to the quitter; or the sudden suppression of the perspiration; or it may be produced by the mud of great towns, composed of iron, urine and other corrosive principles capable of producing this disease, which we may compare with the third species of whitlow in man.

A fresh quitter, which has not as yet affected the cartilage is easily cured; it requires no other treatment than that of simple wounds, but when in its progress it has penetrated into the interior of the foot, so that the cartilaginous parts are affected, the cure becomes difficult, and even doubtful, because it is requisite to extirpate all the parts which the pus has rotted.

Farriers, unacquainted with the anatomical organization of the foot, can form no idea of the surgical operation which this disease requires; it is even lucky they do not attempt it, for of one hundred horses, probably ninety-nine would be for ever lamed, and perhaps the whole number; their method extends no farther than the application of caustics, searing points, and fire stripes; all these local applications, whose effects reach no farther than the surface, are absolutely insufficient; and while the farrier is amusing himself in burning off the fungus's of the exterior wound with vitriol, &c. the matter is making such a rapid progress inwardly in the foot, as to render the quitter incurable. This observation is

founded

founded on daily facts, and it is easy to prove, that not a week passes, without seeing some horses labouring under these incurable diseases, led to the slaughtering houses; let us, however, suppose a horse attacked with the most grievous quitter.

The veterinarian is to begin to probe the wound, by dexterously following the direction and depth of the fistulas formed by the pus in the foot, and he is to endeavour to find out if the cartilage be affected; but as it may sometimes prove impossible to judge exactly of the irregular bottoms of the wound, he ought to determine to proceed to the operation, previously observing the following precautions; let him begin by reducing his food, and giving him plenty of blanched water to drink; let the foot be pared, and the quarter rasped thin, near where the operation is to be made, and the foot be wrapped up in an emollient poultice, during two or three days. The horse, thus prepared, must be tied and thrown on a litter of straw, and a ligature bound round his pastern, to prevent an hæmorrhage; an incision is then to be

made with a bistoury parallel with the coronet, and long enough to be able to discover the cartilage in all its extent; more or less of the superior part of the wall is to be cut away, as occasion may require, but the inferior part of the quarter, as well as the heel, should be preserved, to serve as a fulcrum, or purchase for the foot, unless the state of the disease requires it otherwise; then let him change the instrument, called the sage leaf, with a blunt back, and slightly bent, with which, let him cut away the cartilage gradually, at three or four different attempts. It is in this conjecture, that the anatomical knowledge of the foot is of great and indispensable assistance, particularly, while the operator is passing his instrument behind the cartilage; because this part covers the principal blood vessels of the foot, as well as the capsular ligament of its articulation, with the bone of the coronet, an accidental opening or breach of which would lame the horse for ever.

But however dexterous a person may be in extirpating the cartilage with the sage leaf, some portions of

of the root of it, which are inserted in the bone of the foot, will still remain; these must be taken away with a scraping knife, which must be managed with all dexterity possible, observing to fix this instrument on a solid part, and gently bearing from within outwards, to avoid opening the capsular ligament, which is very near the parts in which the operation is performed. After the last portion of the cartilage is taken away, let him examine whether the bone of the foot be carious; if it should be so, let him remove the carious part, and apply an actual cautery, in order to facilitate the exfoliation.

In fine, having ended all these proceedings, let him inspect minutely into the bottom of the wound, to ascertain whether any sinus or fistula remain, and when the operation is completely performed, let him lay on the first dressing, which consists in applying to the bottom of the wound small pledgets, soaked in a mixture of brandy and vinegar, or spirits of turpentine. These dressings must be so disposed, as to make an equal, but sufficient compression on all the surface

surface they cover; and let him finish the dressing, by laying over the wound, and round the coronet, larger pledgets, to avoid compressing that part, which must be carefully attended to. The bandage consists of a piece of linen almost square, and big enough to go round the pastern and the foot; and a roller three ells in length, or there about, and two inches in breadth, the whole being skilfully laid on, the horse is to be led back to the stable, limping on his three legs, and afterwards the ligature to be taken off. It is necessary to bleed him in the jugular vein to prevent a fever, which most commonly succeeds so painful an operation; it is likewise essentially necessary to keep the patient to his blanched water, and to supply him sparingly with food for a few days.

The first dressing is to be taken off at the end of a week, but without examining the wound, or trying to probe it, least an hæmorrhage should ensue. The second dressing is to be taken off after five or six days, at which time the suppuration will begin to take place,

place, unless the wound has been too strongly compressed, and it is to be dressed in the same manner as at first. In three or four days more, the third dressing is to be taken off, when the veterinarian must examine, if there are any black spots upon the surface of the wound, which is commonly a proof that the cartilage has not been totally taken away. In this case another slight operation must be had recourse to, to remove entirely the small particles that may have remained; afterwards the wound is to be dressed every other day, with the same digestive, excepting the parts which have been cauterised, upon which small pledgets dipped in tincture of myrrh and aloes, are to be laid as a spirituous dissicative, to accelerate the exfoliation, which most commonly happens within forty or fifty days, though I have seen it not take place in a month; but this depends upon the age and constitution of the animal.

When the escar has fallen off, the wound soon fills up, but it is essentially necessary, as has been observed, to be assured of a perfect exfoliation; for if any

dead particles of the cartilage, or of the bone, should remain, they would give rise to fistulas, make the cicatrization imperfect, and occasion a second operation.

To prevent so unfortunate a repetition, it will be necessary, at every dressing, to examine the wound with the greatest attention, and to see if no livid black spots are observable in it, which furnish a greater supply of matter, than the wound itself; probe these spots, and if the exfoliation be not judged complete, introduce a sufficiently solid tent, imbibed with the aloetic and myrrh tincture, and lightly dust it over with powdered vitriol, in order, on the one part, to facilitate the separation of the non-exfoliated portion, and on the other, to consume part of the flesh which covers it: when once the bottom of the wound is expunged and clean, it assumes the appearance of a simple wound, and a perfect cicatrice will make ample amends for all your trouble.

LECTURE

LECTURE V.

Containing the Sequel of the Diseases of the Foot.

FOUNDERING.

THE most severe and stubborn disease, to which the horse's foot is liable, and which is almost ever fatal, unless subdued in its origin, is beyond a doubt, that which is known under the name of foundering. It is to be considered as a fluxion, more or less inflammatory, which has its seat more particularly in the interior of the foot.

This disease manifests itself by the following symptoms, which may be divided into common, and particular. The former are pain and heat in the feet, especially at the coronet; fulness or plethora in the vessels of the legs; a strong pulsation in that

part; a swelling in the sheath of the tendons, and also a symptomatic fever, when the disease becomes serious; whence result sadness, and a distaste for solid food; but the latter symptoms only appear, when the pain and inflammation are increased to a very intense degree.

The particular symptoms appear in the step of the animal when walking, and in the position of the legs when standing still. If a horse, for instance, is foundered in his two fore feet, the great pain he feels in those parts, obliges him to throw back the weight of his body upon his hinder extremities, in such a manner as to bring them forward very near to the centre of gravity; whilst the fore legs remain in an oblique direction, inclining from before backwards. In this position, the loins of the animal are in a state of continual exertion, and if forced to walk, he experiences great difficulty in moving, and his fore legs do not quit the ground, till his hind ones are brought very far forward under his body, the whole weight of which, they are obliged to sustain.

tain. This painful translation of the body, obliges the horse to bend the spine, and this forced action in the vertebræ of the loins, persuades many farriers, that the seat of the disease exists in the muscles of the back and loins, on which they apply remedies of all kinds, the effects of which, as may be imagined, are always useless, and often dangerous.

This treatment, erroneous in its principle, and unsuccessful in its issue, determines the farrier to draw a consequence evidently false, by supposing that the disease has changed its place, and is fallen into the feet.

When the foundering is in the hind feet, the animal stands in a position directly opposite to that we have been describing. He carries his body forward, with his head low, and the anterior extremities under him, by which means the withers become lower than the croup; in short, the attitude of all the parts proves, that nature is engaged in easing the hind feet. by throwing the weight of the mass upon the fore-feet.

But as the hinder extremities are always particularly employed in projecting the body, it is easy to conceive how very painful this effort must be to the horse, since it is only with the fore legs, that he is now able to effect it. And, in fact, it is easy to perceive the state of constraint under which the horse labours, when he displaces one of his fore legs; he hesitates some time before he moves it, and he has hardly taken it up, before he speedily replaces it on the ground, and during this action the tremor and vacillation of the other other fore-leg, denotes the excess of weight which distresses it.

This disease is rendered dangerous by the painful, and forced state of the parts, inducing a considerable degree of fever, which announces itself, as in all inflammatory cases, by the hardness and quickness of the pulse; the heat of the mouth, attended with unnatural thirst, partial sweatings often appear in the neck, near the shoulders, between the fore-legs, as also in the flanks, &c.

Foundering

Foundering sometimes attacks all the four legs, and when that happens, the horse is unable to stand; he therefore is constantly lying down; and I have seen one that placed himself on his back, in order to find ease. It is uncommon for this distemper to attack one foot only, either before or behind. Some authors have multiplied the causes of this disease almost to infinity; they have supposed some to be hereditary; others they endeavour to explain by the aid of physiological systems, which sound reason can never adopt. We shall confine ourselves to the exposition of those only which experience appears to confirm every day.

The most dangerous cause of all is a suppression of the perspiration; this commonly occasions a great inflammation in the feet, the progress of which is exceedingly rapid, the superabundance of blood, its thickness, the vitiated disposition of the humours may increase the intensity of the fluxion, and render its resolution more difficult.

Violent

Violent galloping, or too hard labour may occasion foundering; it may also proceed from too much rest, and it is not uncommon to find a horse in this state, on his being brought out of a stable, where he has remained too long without exercise. It has further been observed, that any abundant evacuation, such as much bleeding, sometimes produces this disorder; it is also frequently owing to the use of too nourishing a food, and too liberally bestowed, such as lucerne, sainfoin, clover, barley, beans, vetches, peas, &c.

Bad shoeing often produces the distemper we are treating of; the farriers, by scooping the sole to excess, occasion it to dry up, facilitate the contraction of the heels, and the shoe which they use being too narrow and concave at top, completes the contraction of the whole circumference of the foot.*

If

* It is worthy of remark, that the writers in the Geoponica, and in the collection of Ruellius, Varro, Columella, and Vegetius; that is to say, all those who wrote before the use of the iron shoe, dwell very little on the diseases of the feet, especially the severer diseases mentioned

If in this state of constraint, the horse is obliged to tread on dry hard ground, the heat increases, inflammation succeeds, and foundering is the consequence. This distemper may also be the consequence of a painful operation; but as several of the causes we have been describing are opposite in their natures, they must necessarily occasion a difference in the disease they produce; and it is on this account that foundering is attended with more or less inflammation, according to the principle which gave rise to it. It ought, therefore, to be treated according to the symptoms which characterise it.

mentioned in this and the foregoing lecture; which fact furnishes a very fair ground of inference, that the method of shoeing now in use, may be considered as a principal cause of those evils. Indeed, when we consider how very delicate, and at the same time, how very important a part of the animal machine the foot is, when we reflect how absolutely the hoof is compelled to obey the form of the shoe, whether it favours or counteracts the original designs of nature in its formation: when we add to these considerations the mischief which a wrong direction given to a single nail must occasion, or an ignorant use of the instrument with which farriers weaken or impair the natural armour of the foot; and finally, if we subjoin the education of those to whom custom has hitherto committed this important trust, and the quality of the art they profess, we shall be well prepared to receive the conclusive proof which experience will furnish, that these causes have considerably augmented the number of diseases of the feet.

I shall

I shall proceed to give a literal account of the treatment which the veterinary schools of the Continent advantageously employ in the case of foundering. Having practised it myself, with success, I recommend it in preference to any other, because I believe it to be the result of the most mature consideration, and the best adapted to cases and circumstances.

The treatment of this disorder is divided into internal and external; I shall begin with the first. When foundering proceeds from the rarefaction of the fluids, frequent and plentiful bleeding will operate with effect in the beginning of the complaint, as also salts dissolved in a decoction of acrid plants. To this end take of sorrel leaves four handfuls, of wild endive two handfuls, of common salt four ounces, salt of nitre one ounce, boil these in two quarts of water; take it off the fire when the sorrel is sufficiently done, pour it out, and give it in two doses, at the interval of an hour.

If

If the distemper is of long standing, and if the fluids are become condensed, which naturally follows their rarefaction, bleeding is recommended, and the salts should be administered, dissolved in sudorific infusions. Take of burdock root four ounces, of fixed alkali one ounce, let them boil a quarter of an hour in two quarts of water, take them off the fire, add angelica and wild valerian roots of each two ounces, elder flowers one handful, let them infuse two hours, pour the liquor off, and add two ounces of sal ammoniac at the time of giving the draught.

When the condensation is carried to excess, the pure alkaline salts, dissolved in proper infusions, are the only means to be employed. Take of the pure vegetable alkali one drachm, of essence of turpentine two drachms, mix and shake them in a small phial, add this mixture to the first draught of the vegetable decoction described above. These active sudorifics will not operate with less effect when this disorder proceeds from a sudden suppression of the perspiration. In all these cases, we must not omit the use of

diluents, which assist the action of these remedies: accordingly, this draught should be followed by two or three diluting draughts, if they even only consist of a simple decoction of mallows.

When a foundering proceeds from too much rest, it requires less active sudorifics, corresponding to the progress which the complaint has made; for this purpose, take of gentian root and rhubarb of each four drachms, of filings of steel two drachms, bruise them, and let them be boiled in three pints of water for about 12 or 15 minutes; being taken from the fire, and infused for two hours, pour it off, and add of sal ammoniac two ounces, after this draught, give the purge No. 8. The foundering that arises from horses having been fed too plentifully with food of a heating quality, does not admit of bleeding. If the abdomen is hard, tense, and overloaded, we must have recourse to the emollient glyster No. 12, and the purgatives No. 11, which are to be more or less increased, according to their operation in the draughts consisting of the infusion of sage and wormwood

No. 5.

No. 5. When however the food has past the stomach, we may venture to bleed, after which we may give a gentle purge No. 9, or a more active one No. 8, according to the constitution, age, and other circumstances.

Sometimes this disorder appears to arise from a super-abundance of the fluids of the body, in which case the use of the evacuants No. 8, are highly necessary, and also the glysters No. 2; and if there is reason to be alarmed at the redundance of the blood and humours, these medicines should be preceded by bleeding, and the diluents No. 6.

There are founderings which discover no other cause or symptom than a pain in the feet; in this case every attention must be given to the distempered part, and we must immediately remove the shoe, in order to examine the parts affected; sometimes it is sufficient to protect particular portions of the sole or heels from the painful compression which they experience. This first relief being

given, we must next have recourse to bleeding, the draughts No. 7, and to nitrous and camphorated glysters No. 12.

To conclude: there are other cases which are caused by accidents, or proceed from excessive pain in some exterior part of the body, often very remote from the feet; cooling draughts, emollient glysters may be given, anodyne poultices and unguents applied to the seat of the pain, is the most proper treatment of this species of the disorder.

Besides the internal treatment, foundering requires a local one of no less importance, the method of which is determined by the actual state of the distempered parts. If the disorder has not yet disfigured the wall of the hoof, if the coronet is not very hot, the vessels of the shank and pastern not very much swelled, and the pain in the foot not very great, we must frequently lead the horse to water, in order to wash and bathe the part; or, what is still better, we must let the extremity soak in cold water,

water, sharpened with vinegar, and a certain quantity of sal ammoniac, No. 16, or acidulated with any concentrated acid, No. 17. The foot is to be taken out, after having soaked an hour and a half or two hours, and the cavity or under part of the foot is to be filled with pledgets of tow or linen steeped in oil of bayberries, very warm, and the coronet the heels, and the wall wrapped up in the poultice No. 15.

These dressings must be renewed three or four times a day, and it is highly important not to delay the use of them, but to let the internal treatment, and the local treatment for the feet, keep pace with each other.

If the feet are more severely affected, and the parts surrounding the coronet very painful, scarify it vertically and deeply in its whole extent, without fearing even to touch the cartilages; experience has proved, that such incisions, in the direction of the axis of the limbs are not dangerous; then put the bleeding

bleeding foot into cold water, accidulated with sal ammoniac No. 16, and when the blood is stopped, take them out of the water, and use the dressing as before prescribed.

If the evil has made still greater progress, and if the swelling and laxity of the coronet, the acuteness of the pain, and the bearing on the heels, announce that the vessels of the foliated or laminated substance are ruptured; in this case removing the sole, or even paring part of its horn, would prove exceedingly dangerous, and would promote the loosening or displacing the coffin bone of the foot: we must, on the contrary, leave to that part all the strength allotted to it; but we must, at the same time, proceed to open the wall, by cutting away part of the anterior surface of the hoof, between the coronet and the sole, to the breadth of two fingers.

When this operation is performed, the part is to be suffered to bleed plentifully in the bath No. 17. It must then be withdrawn and dressed as before directed,

directed, observing to fill up the cavity retisulng from the extirpation of the wall, with pledgets steeped in oil of turpentine. It will be easily conceived that if the evil has made still greater progress, if the bone of the foot, for example, is become carious, &c. it would be rashness to undertake the cure, and that such an attempt would be a signal proof of ignorance.

We must observe, however, that there are founderings of old standing, in the cure of which art is not unsuccessful, but it is easy to conceive, that in such cases, the parts contained within the hoof are only confined, and more or less painfully compressed; that they are attended with no fever, or inflammation, either general or particular; the disease in this case is to be considered as chronical, and must be rendered acute, which may easily be done.

To this end the distempered extremities must be rubbed morning and night with essence of turpentine, from the upper part of the shank to the coronet;

net; these frictions are to be repeated the next and the following day. The inflammation and the irritation this treatment excites, often produces, in a very little time, the resolution of the blood and humours, by which the parts contained within the wall were constrained and compressed.

The horse must be walked during the action of the essence of turpentine, and use must be made of the pledgets steeped in the oil of bayberries, within the sole, and of the defensive poultices No. 15. Whatever may be the causes of foundering, or whatever may be its effects, the diet cannot be too strictly attended to. The animals, who labour under it, should only be allowed blanched water No. 14. Solid food must not be admitted, till the progress of the distemper is stopped; and should the disorder have proceeded from the fulness of the humours, the food could not become salutary, till the animal had been previously purged. Walking the horse, however, can only be salutary, when the foundering has disturbed the bone of the foot; in that case the motion

motion it communicates to the fluids, prevents their stagnation in the vessels, and promotes their resolution.

MEDICAL RECIPES.

DRAUGHTS.

No. I.

℞. Sorrel leaves four handfuls.
Wild endive two ditto.
Common salt four ounces.
Salt of nitre one ditto.

Let them boil in two quarts of water, when sufficiently boiled, pour the decoction from the leaves, add to it the salts, and give it in two doses, at one hour's interval.

No. II.

℞. Burdock root four ounces.
Fixed alkali one ditto.

Let them boil a quarter of an hour in two quarts of water, take it from the fire, add roots of angelica and wild valerian, of each two ounces, elder flowers one handful, let them infuse two hours, then pour off the infusion, and add, when going to administer the draught, of sal ammoniac two ounces.

No. III.

℞. Of the volatile alkali one drachm.
Essence of turpentine two drachms.

Mix, and shake these in a small phial, add this mixture to the draft No. 2, and give it immediately.

No. IV.

℞. Gentian root four drachms,
Rhubarb four ditto.

Bruise these ingredients, and boil them in three pints of water, for twelve or fifteen minutes, then take them from the fire, and let them infuse for two hours, and add of sal ammoniac two ounces.

No. V.

℞. Epsom salts four ounces.
Cream of tartar two ounces.

Let them boil a quarter of an hour in two quarts of water, take the solution from the fire, add sage leaves and wormwood two handfuls, let them infuse one hour, pour it off and give it.

No.

No. VI.

℞. Borage.
French mercury.
Pellitory of the wall.
Wild endive, of each one handful.
Salt of nitre one ounce.

Throw the whole into three quarts of boiling water, let them infuse an hour, then pour it off, and give it.

No. VII.

℞. Of the draught No. 6, one quart.
Camphor half an ounce.
Rectified spirits of wine two drachms.

Dissolve the camphor in the spirits and add it to the draught.

No. VIII.

℞. Draught No. 6, one quart.
Powdered aloes one ounce.
Tartarised vinegar four ounces.

Warm it a little, and stir it from time to time till these substances are dissolved and mixed.

No. IX.

℞. Draught No. 6, three quarts.
Tartarised vinegar eight ounces.
Aloes two drachms.
Dissolve and mix as above.

No. X. Glysters.

℞. Decoction No. 6, three pints.
Add of antimonial tartar one drachm.
Dissolve it warm, and give it in a glyster, after the animal has been purged.

No. XI.

℞. The above glyster.
Add aloes two drachms.
Honey four ounces.
Dissolve it warm, and give it as above.

No. XII.

℞. Draught No. 7.
And administer it as a glyster.

No.

No. XIII. A Suppository.

℞. Soap two ounces.

Powdered aloes one ounce.

Beat them together in a marble mortar, and mix them in your hands, and make a roll, which introduce into the rectum.

No. XIV. A Drink.

℞. Common water, one pail full, whiten it with rye meal, and add salt of nitre one ounce.

No. XV. A Poultice.

℞. Soot from the chimney well baked and sifted one pound, mix it with a sufficient quantity of the strongest vinegar that can be procured. This poultice is to be renewed every four hours.

No. XVI. Baths.

℞. Sal ammoniac two ounces.

Sugar of lead four ounces.

The coldest spring water one pail full.

Let the part affected be soaked in this bath during one hour;

hour: the same bath may serve several times, taking care, before it is used, to immerse the vessel in which it is contained into cold spring water, in order to cool it.

No. XVII.

℞. Spring water one pail full.
Add of the vitriolic acid four ounces.
And let the part soak as above.

A foundering often resists both the efforts of nature and of art. I shall subjoin to the account here given of this distemper, the following observations.

If the treatment that has been prescribed does not stop the progress of the disease, and if it does not produce a resolution of the humours, it will terminate with more or less dreadful effects, according to the age, constitution, and other circumstances of the animal.

Sometimes the inflammation is so rapid, that a total falling off, or shedding of the hoof takes place, in two

two or three days. If this misfortune happens to all four feet at once, the animal must be immediately consigned to the slaughtering house ; we must not expect the reproduction of a new hoof, except when the fall of the hoof takes places in one foot only ; and it often happens, that foundering attacks the foot that has been obliged to support the whole weight of the body for a long while. The part reproduced is always more or less feeble and deformed, and the horse is only fit for the purposes of husbandry.

When the separation of the hoof does not take place, it becomes totally deformed ; the toe grows long and bends upwards ; the surface of it is covered with irregularities called circles, or the sole is pushed outwards by the coffin bone, which draws nearer to the perpendicular line, by detaching itself from the interior surface of the hoof; consequently, the inferior surface of the foot becomes convex, and this conformation takes the name of crescent. In this state the horse is obliged to bear entirely on the heels and frog, and the leg in moving describes a semi-circle

mi-circle from within outwards, which in French is called swimming.

When the distemper has been less violent than in the preceding case, although it does not occasion the deformity of the feet, yet the horse treads with more or less difficulty, especially at coming out of the stable. The play of the joint being confined, the leg moves with difficulty, and it is then said, though improperly, that the horse is stiff in his shoulders. When indeed the obstacle to motion is in the inferior articulations, bathing them in warm mineral water, or in the mud of those waters, has often produced good effects.

LECTURE

LECTURE VI.

Containing a Description of the Case, commonly known under the Denomination of a Strain in the Back-sinews, and its Rupture; the Fracture of the Bone of the Coronet, the Navicular Bone, the Bone of the Foot, &c.

ALL authors who have written on the accidents incident to the legs of horses, mention the extension of the tendons of the extensor muscles of the foot, vulgarly called, *a strain in the back-sinews*; they describe the causes after their own manner, and prescribe the remedies which they think best adapted for the cure. I am sorry to differ in opinion from them; but I am convinced, that no such accident can ever take place, and that

they are deceived by the erroneous ideas they form of the mechanism of the organs of motion, particularly of the legs.

Let us endeavour to explain what we here advance: and in the first place we shall lay down, that tendons are incapable of extension: in the next place, that they are not intended to maintain the bony parts in their places, which function belongs to the ligaments; and when the muscles at all contribute to that effect, the tendons, which are their appendages, are passively employed. This requires a further explanation: let us take the muscles of the foot for an example.

Nature, ever wise and economical in her productions, has provided the muscles with a certain bulk and strength, sufficient to move the parts to which they are affixed; and by this means has proportioned the power to the resistance; at the same time preserving a light and elegant form, which the too great bulk of the muscles, or their multiplicity, would infallibly have prevented.

The conversion of fleshy fibres into tendinous, renders their insertion in the substance of the bone more solid; the fleshy part possessing a power of motion equal to the natural resistance, it would have been unnecessary for the tendon to possess the same faculty; it is therefore employed, on the contrary, as a fixed point for the action of the muscular fibres.

If we were to grant a slight degree of elasticity in the tendinous fibres, this would add nothing to the possibility of extension in the tendon; because, an effort capable of destroying the natural degree of extension and flexion of the articulated parts, would lacerate the muscular fibres, before the tendinous fibres would receive the smallest injury; therefore the tendon is incapable of distention. This part may, indeed, be broken, but it is by an effort very different from that which we have just supposed, and which shall be explained in treating of the rupture of tendons. If the tendons were employed in maintaining the bones in their places, the muscular fibres would be constantly distended, or violently

contracted. In either case the action of the parts would be checked. The principal function of the muscles and tendons, therefore, consists in giving motion to the parts, and not in supporting them. I have already said that the ligaments alone are employed in this last function; the ligaments would therefore be lacerated by any effort whatever, before the tendons would feel the least effect; which proves, that these last parts are not exposed to the extensions which are daily complained of.

Let us suggest an experiment, which will elucidate all we have advanced: take the fore leg of a horse, dissect the flexor muscles of the foot, and also the suspensor ligament of the pastern; afterwards, place the leg in its natural position, that is to say, perpendicularly; steady the articulation of the knee to prevent its flexion, and lay on the superior part of it a considerable weight, that shall exceed that which it naturally supports; afterwards, cut transversely the tendons of the flexor muscles, or the *back-sinews*, and you will find that the suspensor ligament

ligament alone is sufficient to keep the articulation of the pastern in its place; observe that the whole weight of the body falls on this part, since all the parts beneath it, as the pastern, coronet, and foot, are removed from the perpendicular, by describing an oblique line, which forms with the shank-bone, an angle of, at least, 25 degrees. If, on the contrary, you cut the suspensor ligament, you will see the articulation in question fall almost to the ground, and the muscles distended to such a degree, as to make it impossible for them to contract themselves, or even to oppose any resistance in this violent state, should the case happen in a living subject. It will certainly be objected, that operations made on dead bodies do not always produce the same result which is observed in living animals; but here the question is only of a purely mechanical operation, which may be attempted without any doubt of success. I shall not pretend to deny the slight degree of contraction which the extensor muscles exert, in order to keep the leg strait when standing; but this action is reduced almost to nothing, when the limb itself is placed in a perpendicular position.

What then is the cause of those swellings which we so frequently observe along the tendons or sinews of the leg, after violent galloping, or after any effort whatever, commonly called *strains*? this is the question that we are now about to investigate. I do not speak here of those swellings which are the result of long continued exercise, or long rest, or which depend upon internal causes; but of those only which are occasioned by some violent effort, as in the case when a horse treads on an irregular surface, or when he leaps too suddenly, without being duly prepared; or executes the leap badly; in either case, the ligaments which determine the extent of the flexion and extension of the parts, are distended and strained, in proportion to the power acting on them at the instant of the exertion, in consequence of their want of elasticity. It is also on this account, that the pain occasioned thereby is great, and of long duration. It is this sharp pain, which, irritating the neighbouring parts, inflames them, and causes the blood and humours to lodge there; but the ligaments themselves, being composed of an extremely hard texture,

which

which receives scarcely any kind of vessels, are not liable to swelling. The increase of bulk of the leg therefore, is nothing more than a symptom of the complaint, and not the complaint itself, as has been too commonly supposed. The seat of the affection is still less in the tendons, since I have made it clear that the rupture of the muscles must take place before the tendons can be at all affected, in case of a strain.

I am already persuaded, that many will find the mechanical and anatomical explanations given here, difficult to be understood; but I must acquaint my readers in general, that I do not write for those who think they are masters of the subject, because such persons do not stand in need of my instructions; but for those only who are either already initiated in the science, or who are desirous of obtaining information; to the former these explanations will not be obscure, and to the latter, a very little attention and assiduity will render them familiar.

Let

Let us now return to our object, and endeavour to establish conviction on all we have said. If, for example, we were to dissect the leg of a horse, labouring under a *strain in the back-sinews*, according to the vulgar notion, we should discover no affection in the substance of the tendinous parts, which, on the contrary, would appear in their natural state; but if the surrounding parts were examined, we should observe, according to the duration of the disease, a relaxation in the sheaths of the tendons, or in the capsulary ligament of the articulation; or, in short, in the whole vascular system.

If the ailment is of long standing, and nature has exhausted all her resources in endeavouring to discuss the stagnated humours without being able to succeed completely, a small hard swelling will appear in the sheaths of the tendons, sometimes two, and even three, which are called *ganglions*; whose situation near the tendons is sufficient to make the horse walk lame for the remainder of his life. These *ganglions* are often the result of a bad cure; particularly

larly when powerful astringents have been employed too early, having previously neglected the use of emollients. For instance, an unshod horse, who, in a quick pace, such as a gallop, sets his toe upon a stone, may be violently strained, because in this false step, or wrong position of the foot, the articulations of the bone of the foot, the pastern, and coronet, are stretched in their flexion; but the strain will become more dangerous, if the foot is shod with a shoe with very thick heels, and if the sole and frog are too much pared away; because, these parts being too far distant from the ground, and the frog being, as I have often had occasion to say, intended to support a part of the weight of the body, it is thereby rendered incapable of affording a purchase to the articulations. In this case the effort is communicated to the bone of the foot, or coffin bone, which presses upon the fleshy sole; and the pressure upon this part is often so violent, as to make it the seat of the disease. This is so true, that frequently a cure can only be obtained by the operation of unsoling.

The principles here laid down, might be supported by a variety of observations on the mechanism of the animal machine; but this would lead me too far from my purpose. Those anatomists who may peruse this discourse, will be more capable of developing and extending the imperfect ideas, which I have ventured to advance on a case, which I believe has been hitherto badly described, and as badly treated. I proceed now to the symptoms which caracterise it. These symptoms are, the swelling which appears between the knee and pastern, and extends even to the heels; the tension, heat, and pain of the part, which occasions the horse to walk more or less lame.

It must be observed, that these symptoms are common to other cases; such as a nail driven into the quick, or a blow on the tendon; they may be equally the effect of long exercise, or an accumulation of humours, in the case of an acute disease. It is therefore necessary to examine with great caution and reflexion, before we give a decided opinion on the nature and cause of the complaint. But if a horse,

perfectly

perfectly free in his limbs, is suddenly attacked with a lameness, attended with swelling on the part just mentioned, and if this should happen after hard running, a leap, a fall, or a slip, without any blow, contusion, or wound in the tendon, we may then suspect the existence of a strain in the ligaments, and in the sheaths of the tendons. But, as I have already observed that in this case the fleshy fibres would participate in the effect of this extension, we should not neglect to feel the extensor muscle of the foot, which is situated at the hinder part of the arm; in order to discover whether the animal experiences any pain in that part. When the disease is ascertained, there remains only to prescribe proper remedies, for the affected parts.

Astringents are most commonly the remedies employed to produce a revulsion of the humour. These succeed, if the accident is not violent, and if they are employed; but, if two or three days are allowed to elapse after the accident, before they are applied, they, on the contrary, fix the humour in the part and

coagulate it; constrict the vessels, check the circulation, and at length occasion indurations, the effect of the concretion of the fluids.

As it would be in vain to interrogate our brute-patients on their situation, and as grooms, through design or ignorance, are more or less apt to deceive us, we ought always to suspect the disease to be of some standing, and consequently should employ emollient substances, as the properest to begin the cure with, in the following manner.

For this purpose, take mallows, marsh-mallows, pellitory of the wall, of each one handful, boil them for three quarters of an hour, in common water, chop them fine for a poultice, which is to be applied to the leg, from the knee down to the foot, and which is to be moistened every three hours with some of the emollient decoction. The following ingredients will answer the same purpose, take crumb of bread, boil it in cow's milk, to which add one drachm of saffron,

saffron, or barley meal, mixed with a sufficient quantity of the emollient decoction, made of mallows, &c. or, for want of these ingredients, use warm water, by way of bath, or fomentation; it is the most powerful relaxant, in human as well as in veterinary medicine. If in eight or ten days the pain is not lessened, it will be necessary immediately to unsole the foot; because, it will be a proof of the pressure of the bone of the foot upon the fleshy sole, a pressure which occurs oftener than is supposed, in consequence of the strain treated of in this lecture.

If, notwithstanding the treatment here recommended, the swelling should not be entirely dissipated, in about a month, or more, and if there should remain certain hard substances, called *ganglions*, seated in the sheaths of the tendons, we must determine on the operation of firing, as the most powerful resolvent. This operation, to which I am no great friend, often produces good effects when not applied too late; that is to say, when applied before the humour becomes concreted, and the tumour insensible,

and

and hard, in the latter circumstances, the effect of firing goes no further, than to extract what little fluid may remain in the affected part, by the inflammation and suppuration it creates; it increases the hardness, and for ever prevents its discussion. Experience having shewn, that remaining a long time in the stable is hurtful to the diseased part after the operation of firing, it will be requisite to exercise the horse daily, in order to promote the cure.

In the beginning of this lecture, I said, that tendons are not capable of extension, and at the same time, I allowed the possibility of their rupture: these assertions may appear contradictory to those who are not versed in the knowledge of anatomy, nor acquainted with the laws of mechanics; it is nevertheless easy to conceive, that a sudden degree of force, suddenly exerted on a fixed point of an extended rope, is capable of breaking it at that point, though the opposite point be not in the least deranged; and that the same degree of force, employed successively on all the other points of the rope,

rope, will not even be able to stretch it. Any foreign power whatever, acting on the cords of an animated machine, produces the same effects. For instance, if a horse sets his feet badly on the ground, or places his leg in a false direction, at the instant he is obliged to make a violent effort, directing all his force on the lower insertion of the tendon, this latter part may be suddenly broken, or snapped, and separated from the bone, while the rest of the tendon, and even the muscle, will have experienced no sensible degree of extension.

However, this accident is easily to be known from the following symptoms: First. When the animal attempts to walk, he is able to stretch out his foot to carry it forward, but he cannot possibly bend it backward; because, the flexor muscles having lost their fixed point, can no longer act. Secondly, For this same reason, when the tendon is examined, it is found in a state of slackness, from the knee down to the pastern, instead of being more or less tight, as is the case when no rupture has taken place. Thirdly,

The

The horse appears to feel an acute pain when the fingers are inserted between the heels. Fourthly, A swelling is soon perceived in this part, which indicates a collection of humours; but it is of the utmost importance, not to wait for the appearance of this last symptom; because the collected matter is capable of making great havock, particularly in the articulation of the foot; which, when once open, renders the case absolutely incurable, and finally destroys the animal. To prevent this accident, which of all others is the worst and last, the foot must be immediately unsoled, an opening made in the fleshy frog sufficient to bring the extremity of the tendon to view, and upon which some proper relaxing ointment may be laid, such as the simple digestive, the use of which must be continued until a portion of the tendon falls off in the manner of an exfoliation; without which, a cure can never be obtained. The wound is afterwards to be dressed with spirituous applications, as the tincture of myrrh, of aloes, and the spirit of turpentine; but, as it is impossible to get hold of, and at the same time to retain the extremity

tremity of the tendon in the place of its original insertion, that is to say, on the bone of the foot, we can entertain no hopes of a perfect cure. The best we can expect is, that the tendon may adhere and unite itself to the bone of the coronet, which however confuses the mechanism of the foot. We accordingly find, that almost all horses that have been treated for a similar accident, remain for the most part lame during the remainder of their lives; nevertheless, in this state, some horses may still be of use.

The bone of the foot, or coffin bone, is also liable to be fractured; this rare accident occasions a very painful lameness. The causes producing it are nearly the same as those which occasion the rupture of the tendon; that is to say, the wrong position of the foot, at the instant the horse exerts his strength, either simply to move forward, or to carry or draw a heavy weight. In this case the tendon is snapped from the bone, or the bone of the foot is fractured; which of these is determined by the accu-

mulation or direction of the force on one or the other of these parts. It must be owned that the fracture in question is not easily discovered; the only symptom to make us suspect its existence is, the swelling of the coronet, and the pain which the horse feels when that part is pressed. But, before determining this point, we must enter into a scrupulous examination of all the parts of the limb. If, however, we suppose the disease in question really to exist, the method of cure is extremely simple; it consists chiefly in unsoling the foot, in order to prevent the bad effects of inflammation, by giving vent to the humours, which would otherwise produce great havock within the hoof; and in keeping the animal perfectly still and quiet; and, as the fractured bone is surrounded and confined by solid parts, and its motion, besides, being extremely limited, nature will easily effect a re-union. At the expiration of three months, the horse may be sent to grass for a short time; and, if circumstances will permit, should be moderately exercised upon soft ground, by which means a more perfect cure will be effected.

Being

Being confined in these lectures to the consideration of the foot alone, I cannot, without departing from my plan, speakof the diseases incident to the adjacent parts; nevertheless, the bone of the articulation being contained within the hoof, and lying contiguous to the coronet bone; I cannot terminate this work without saying a few words on the fracture of these two latter bones. It cannot be denied, from their situation, that they support the whole weight of the body, even in an oblique direction; that in every motion of the animal, this weight must be equally distributed, on every point of the articulated surfaces; and that, consequently, any action which causes an unequal distribution of that weight, throwing it suddenly on a single point, incapable of sustaining it, undoubtedly fractures the bone. This accident is not easily discovered in the bone of the foot, but may be often ascertained in the coronet, when the swelling is not great, by pressing the fractured pieces together, by which means a sensible degree of friction is produced. The reduction of these fractures is not in the power of art. It would be

useless to attempt the application of a bandage; and as it is impossible to make a horse keep his leg up horizontally, as upon a chair, there is no other method than to abandon the cure to the agency of nature. The horse must be kept, if possible, in a perfect state of rest; at the same time anodyne poultices should be employed to calm the pain, the violence of which is able to create a fever, and even to produce a suppuration in the affected parts.

Having hitherto omitted to mention an accident that frequently occurs, called a prick of the foot in shoeing, I shall terminate this lecture with a few words on this subject.

It may happen to the most skilful farrier, to prick a horse in shoeing, either by a motion of the horse, while the nail is driving; or, when the nail takes a wrong direction from the horny substance being too hard; in either of which cases, the point not being able to penetrate the wall, makes its way into the parts which offer the least resistance.

Sometimes

Sometimes the blade of the nail splits in two, one part of which is forced outwardly, while the other penetrates within. It also happens sometimes, that the nail meets, in driving, with a remnant of an old nail, which turns it out of its direction, and forces it into the quick: this latter part though not pricked, may be compressed by a weak nail bent inwardly. In all these cases, if the nail is drawn immediately, no bad consequence follows; even if blood should appear at the orifice, it will require no operation, nor the application of any remedy: but if the nail should remain some days in the foot, an inflammation, and frequently a suppuration takes place in the affected part. In this case, having ascertained exactly the seat of the wound, an opening must be made between the wall and the sole, deep enough to reach the bottom of the wound, and to bring to view the inflamed and suppurated parts, and a free issue given to the matter. The wound is afterwards to be dressed with spirituous applications, such as the spirits of turpentine, tincture of myrrh, aloes, &c.

If

If the prick is of long standing, if the pus or matter, has not only affected the foliated substance, the fleshy sole, the bone of the foot, but which sometimes happens, has even penetrated to the coronet, not only an incision is to be made in the upper and lower part, but suppuratives also, such as the simple digestive mixed with basilicum, must be applied in order to facilitate its issue. If the pus should have affected the cartilage, the operation for a simple quitter must be immediately performed, which consists in separating the portions of the cartilage, rendered carious by the pus.

If the horny sole seems partly separated from the fleshy sole, we must determine to unsole the foot, persuaded, that the cure is infinitely more certain, and more speedy, when all the contaminated parts are exposed to view, than when the matter is permitted to burrow and form other sinuses. It would be useless to enter into a fresh detail, to explain the treatment of the wound. It is sufficient to say, that the bony, cartilaginous, tendinous or aponeurotic parts,

are

are to be dressed with spirituous applications; fleshy parts, with the simple digestive at first, and afterwards with spirituous, and the cure terminated by dissicatives.

Among the number of shoes mentioned in the course of this work, there are two of which I have given only the names, but which, on account of their utility, deserve particular attention; these are the scate shoes: See plate the second, No. 7, and 8.

Let us suppose a case in which they are to be used. In a horse, for instance, labouring under a long lameness, the continual pain which he feels in the extremity of the limb, constantly obliges him to throw all the weight of his body on the sound leg, so that the lame leg is always in a state of flexion. The muscles, the tendons, and the ligaments, insensibly lose their action, for want of exercise; the circulation is retarded in every part of the limb, which is thus deprived of the nourishing juice intended for its support; a spontaneous contraction takes place,

in

in the organs of motion, the effect of which is such, that it often happens, that after curing the disease, the leg remains strait, the fetlock is carried forwards, and the horse walks upon the toe. When this accident is neglected, it will resist all the efforts of nature and art, and the animal remains lame all his life; and it is easy to foresee it and provide against it, or to attack it in its origin, by the following method.

When we observe in the leg a propensity to remain in a state of flexion, and that the extension is not compleated, even when the weight of the body bears upon it, it must be held in the emollient bath, three times a day, for the space of two hours each time; and in the intervals, a poultice of the same nature, composed of emollient plants, applied to the fore legs, from the elbows to the feet; and from the thigh to the foot, in the hind feet; afterwards, the horse must be shod in the following manner, with the shoes already mentioned: the end proposed by using this shoe, is to effect a progressive extension

sion of the muscles of the affected limb, as well as a relaxation of the ligaments, by which means the parts may be brought insensibly to their natural situation.

To obtain this end, the shoe No. 7, must be applied to the foot of the lame leg, which, by its prolongation at the toe, determines the fetlock backwards, and obliges the horse to bear more particularly on his heels. Afterwards, apply the shoe No. 8, to the foot of the sound leg, which is raised in a small degree, by means of the three caulkings of the shoe in question. Consequently, if the horse endeavours to throw the weight of the body on this leg, he is obliged to extend it; in this case, the diseased leg becomes too short; but, as the horse cannot remain a long time in this position, he mechanically directs the weight of his body to the diseased leg, and the moment this leg reaches the ground, the other must of necessity bend itself.

It is easy to conceive, by this double operation, that the extensor muscles re-assume progressively

their functions, and that the flexor muscles are so far extended, as to cause the parts of the leg to return to their natural direction and situation.

The too frequent use of blisters, in the accident here considered, ought to be rejected, as well as that of firing, which cannot but increase the evil, and even render it incurable.

Here I terminate these lectures, which I offer only as elements of the art of shoeing, and of the accidents and diseases incident to the foot: there now remains nothing more than for me to endeavour to animate the pupils, to possess themselves of the principles here laid down, and to endeavour, in the course of their practice, to super-add new ones; and I shall esteem it a real reward of my labours, if any one among them should go beyond me in the career in which I am engaged.

FINIS.